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Farming status and reading preference in a magazine-type publication presenting farm information

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NOTE TO USERS

FARMING STATUS AND READING PREFERENCE IN A MAGAZINE-TYPE PUBLICATION PRESENTING FARM INFORMATION

by

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I. INTRODUCTION

A vast number of magazines have been developed during the past century which have been devoted to agricultural problems and reading matter of particular interest to farmers. These publications have played an important part in improving the country's agriculture. The farm press has come to be relied upon as an important medium in interpreting and disseminating current agricultural information for the man on the farm.

Paralleling the growth and importance of the American farm press has been the development of the agricultural college publications. Because such publications have been close to the productive research of the state experiment stations, they have become a direct route in relaying information from the scientist to the farmer. Because many of the complex problems now facing the farmer are being solved in the laboratories of state institutions, the college's responsibility to the farmer through its publications has become increasingly important. The rapidity with which the solutions to these problems are accepted and practiced by the farmer is dependent not only upon the clarity with which the information is reported, but to a great extent upon the interest the information holds for the farmer. The farm reader asks only an understandable report of research findings in the area in which his major interests lie.

If the editor of the publication is to present such a report, then it becomes increasingly important that he know more about the reading habits and preferences of the reader for whom he is writing. In other words he must be vitally concerned about the answers to such questions as these: Who reads my magazine? Why do they read it? Why don't they read it? What part of it do they read?

To obtain and interpret the answers to these questions requires considerable information about the reader. What characteristics does he possess which influence his reading habits and preferences? How do such factors as age, education or type of farming program relate themselves to his interests concerning agricultural information? Needless to say, the answers to questions such as these are not easily obtained.

In the past, little has been done by the editor of the agricultural college publication to find the answers to these questions. The traditional 6 x 9-inch college bulletin, while possessing little change in style and format, has been sent to farm readers year after year with few attempts by the editor to test its effectiveness. The editorial policy of the magazines has been based upon assumed reader preferences, with little or no data available concerning the reader.

Some editors of college publications have, however, risen to the task of knowing the reader and his reading interests, and in turn

placing in the reader's hands a publication which satisfies those interests. Typical of this attempt to establish a better liaison between publication and reader has been the work of Iowa Farm Science, a college publication printed in magazine style and format, presenting the results of research to farm and home readers.

In an attempt to keep the magazine abreast of developing needs and opinions of readers, the editors of the magazine conducted a survey in 1950 to determine what subject matter the readers of Iowa Farm Science preferred to read.

The results of the survey answered many of the questions posed by the editors of Iowa Farm Science. The editors discovered not only what farm and home information the readers preferred, but also some of the preferences concerning the method of presenting this information.

Notwithstanding the value of the information concerning reader preferences supplied by the investigation, many new and important questions were raised by the editors. Chief among these were the following: What are the characteristics of the readers who have responded and how do these characteristics affect the responses that have been made? Are such factors as age, education, farming status and geographical location, for example, related to reading preferences

and interests? Do the rural readers of Iowa Farm Science possess characteristics similar to the characteristics of the rural population of Iowa, or are they a unique reading group by themselves?

In an attempt to provide the answers to these questions the present study was undertaken.

II. REVIEW OF LITERATURE

A new field of mass communications research has grown up in recent years as a result of the need for more information concerning the mass audience and what it reads in books, magazines and newspapers, or hears from radio and television. During the past decade there has been a proportionate increase in research in readability, readership and reader preference.

An examination of the literature, however, indicates that little previous work has been reported on reader preference in a magazine-type publication presenting farm and home information. Furthermore, relatively few investigators have attempted to show relationships between characteristics of the rural reader and his reading preferences.

A few of the studies most closely related to readability, readership and reader preference are reviewed here.

The relation of style factors to reading comprehension has been the subject for study of many educators and psychologists. Some investigators prominent in this field have been Gray and Leary, Dale and Chall, Flesch, and Lorge.

According to Lorge[1], investigators have been interested since about 1923 in the problem of predicting difficulty of reading passages as a function of the internal structure of the reading passage. Lorge stated:

> Among the variables of internal structure that have been considered, the following have been used more or less frequently: Number of running words, number or percentage of uncommon or hard words, number or percentage of polysyllabic words, vocabulary difficulty, vocabulary diversity, number of personal pronouns, number of prepositions, number of simple sentences, average sentence length in words or syllables, number of ideas per hundred words and the like.

In a continuing effort to improve the effectiveness of Wallaces' Farmer, Editor Donald R. Murphy has undertaken or sponsored several studies dealing with style of writing in his paper. One of the first experiments to test the relation of style to readership was directed by Murphy[2].

Murphy ran a split-run test of this relation in the March 1, 1946, issue of Wallaces' Farmer. In his experiment two versions of one article were presented to samples of his readers. The style of these

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[1]Lorge, Irving. Predicting Reading Difficulty of Selections for Children. Elementary English Review. 16:229-233. 1939.

[2]Murphy, D. R. Test Proves Short Words and Sentences Get Best Readership. Printers' Ink. 218, No. 2: 61-64. 1947.

articles was measured by a readability formula developed by Flesch[1]. One version scored 3.66 in readability; the other, 1.5. The content of the two versions was the same; headlines, illustrations, etc. were the same. A reader-interest survey revealed eighteen per cent more readership among men readers for the "easier" version (score: 1.5).

In November, 1946, Murphy[2] repeated the experiment to test the reliability of these results. In this second split-run test a readability differential of 3.5 to 1.5 resulted in from forty-five to sixty-six per cent more readership for the "easier" versions of several pairs of test articles.

Ludwig[3] investigated certain specific factors of style as they relate to readership of Wallaces' Farmer by Iowa farm men. This two-part study isolated one factor of readability and the factor of reader interest to discover how they relate to readership.

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[1]Flesch, Rudolf. Marks of a Readable Style. Teachers College, Columbia University Contribution to Education. No. 897. 1943.

[2]Murphy, D. R. How Plain Talk Increases Readership 45% to 66%. Printers' Ink. 220, No. 12: 35-37. 1947.

[3]Ludwig, M. C. A Controlled Experiment in the Relation of Certain Style Factors to Readership of an Iowa Farm Paper. Unpublished M. A. Thesis. Iowa City, Iowa, State University of Iowa Library. 1949.

The subjects for the study were subscribers to Wallaces' Farmer. They were adult males (age 20 or over) living on Iowa farms of thirty acres or more. Those interviewed lived in twenty-three Iowa counties selected as being representative of the counties in which the paper circulated. The farmers interviewed were also selected on the basis of type of farming, age and educational attainment. Farmers were separated into samples A and B.

The December 4, 1948 issue of the paper was printed in two versions, A and B. Versions A and B of the paper were delivered to readers in samples A and B respectively. Versions A and B of the paper had identical form and content with the exception of certain experimental articles.

Results of the investigation seemed to point to a definite vocabulary-readership relationship, with readership being inversely proportional to vocabulary difficulty.

Ludwig also measured the relationship of readership to human interest in terms of personal words and personal sentences. He concluded that, on the basis of the data used, with the given readers and articles, readership was not found to be related to human interest as measured by Flesch.

In a study published in 1931, Waples and Tyler[1] demonstrated that particular groups of readers have marked preferences for certain topics, while they avoid other topics.

In studying the subject of reading from the point of view of the reader's interest, these investigators prepared an exhaustive list of several thousand questions which had been discussed in magazines addressed to the general reader and published in the United States during the previous decade.

The list was made by sampling the Readers' Digest and the Readers' Guide to Periodical Literature. Questions discussed which had elements in common were placed under appropriate headings, which served as representative topics. With the exception of four types of material excluded from the study, the list of 117 topics purported to include all contemporary topics of interest to the general reader. The four types excluded were subjects addressed primarily to particular vocational groups, historical subjects, humorous writing, and pure fiction.

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[1]Waples, Douglas and Tyler, Ralph W. What People Want to Read About. Chicago: American Library Association and the University of Chicago Press. 1931.

Ratings were obtained on the topics from typical groups of readers to indicate the relative interest of each group in the 117 topics. Such factors as sex, age, occupation and amount of schooling were the basis of selecting groups. Among the groups studied were high school teachers, post office employees, prisoners, librarians, Vermont farmers, machinists, and San Francisco waiters.

Waples and Tyler found that of the factors affecting group reading interests in different degrees, sex had the greatest effect, followed by the amount of schooling, occupation, environment, age, size of community, and time spent in reading, in the order named.

Gallup[1] made a study in 1928, the purpose of which was to develop an objective method which could be used by newspaper editors to determine which types of news, features and advertisements included in their publications were most widely read. The ultimate purpose of the investigation was to provide a means by which newspapers could be adapted more effectively to their respective communities.

One thousand readers of the Des Moines Register and Tribune were interviewed to determine the reader interest in 294 types of

[1]Gallup, George H. An Objective Method for Determining Reader Interest in the Content of a Newspaper. Unpublished Ph.D. Thesis. Iowa City, Iowa, State University of Iowa Library. 1928.

news, features and advertisements. Readers were interviewed in the cities of Des Moines, Grinnell and Newton, Iowa. Farm readers residing in the rural areas surrounding Grinnell and Newton were also interviewed.

The reading interests of ten different classes of individuals were studied in Des Moines, ten in Newton and Grinnell and two in the country. The classifications were based upon sex and occupation. Women were classified according to the occupation of their husbands.

Farmers, since they were all engaged in approximately the same work, and since they occupied about the same place on the social scale, were not classified except on the basis of sex.

Gallup compared the percentage of readers of each class with the percentage of readers of other classes in the case of all of the 121 items published in the Des Moines Register.

Gallup found that business and professional men read virtually the same thing in their newspapers as salaried men. Between the salaried class and the skilled class there was a rather pronounced difference.

He also found that the interests of the class composed of young men correlated higher with the interests of business and professional

men than with any other class. This fact was accounted for on the ground that a majority of the young men interviewed were high school and college students who were preparing to enter business and professional fields.

Gallup also attempted to determine any differences in reading interests among the city, town and country readers of the two newspapers. He was able to point out striking differences among these three groups. The interests of the town readers were found to be quite different from those of the farm readers. The farmers represented a distinct group in the matter of reading interests.

Gray[1] has estimated, by his summary of evidence available for the general population, that what adults presumably read is increasingly large in amount and very unequally distributed among sections of the country, occupations, age groups, groups differing in number of years of schooling and different social environments. Taken as a whole, Gray's contribution has established the fact that all but five per cent of the entire adult population know how to read and are reading material of very uneven quality.

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[1]Gray, W. S. and Monroe, Ruth. The Reading Interests and Habits of Adults. The Macmillan Company. 1929.

Perloff[1] conducted a study to determine the way in which five variables combined for maximum readership of articles in The Saturday Evening Post. The study dealt with the reactions of men only. Since the ultimate objective was to predict, prior to publication, how many male readers would start to read the published articles, the multiple regression technique was used.

There were 190 articles included in the study. The articles used were those appearing in issues of the Post on which readership surveys had been made. Questions were asked to determine the number of men who saw, started and finished each item in the issue. Since the primary concern of the study was the article's power to attract male readers, the criterion selected was the percentage of men who saw the article and started reading it.

Five variables believed to be determinants of starting readership were studied. These variables were: (1) number of illustrations; (2) color of illustrations; (3) sex of persons in illustrations; (4) proportion of text devoted to opening page(s); and (5) subject matter of the article.

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[1]Perloff, Evelyn. Prediction of Male Readership of Magazine Articles. Journal of Applied Psychology. 32:663-674. December, 1948.

Perloff found that the multiple correlation and regression technique proved to be a successful method for predicting starting readership of Post articles by male readers.

The order of the relative importance of the five variables included in this study were: (a) subject matter; (b) number of illustrations; (c) sex of persons in illustrations; (d) color of illustrations; and (e) proportion of text devoted to opening page(s).

In a comparable study, Perloff[1] determined the way in which the foregoing five variables combined for maximum female readership of articles in the Post.

It was concluded that the order of the relative importance of the five variables included in the study was (a) subject matter; (b) sex of persons in illustrations; (c) number of illustrations; (d) proportion of opening page(s) devoted to text; and (e) color of illustrations.

Myster[2] conducted a study at the Iowa State College, the purpose of which was to develop a useful technique for estimating the difficulty

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[1]Perloff, Evelyn. Prediction of Female Readership of Magazine Articles. Journal of Applied Psychology. 33:175-180. April, 1949.

[2]Myster, Alonzo M. Reading Difficulty of Iowa Agricultural Experiment Station Bulletins. Unpublished M. S. Theses. Ames, Iowa, Iowa State College Library. 1941.

high school pupils encounter in reading the Iowa Agricultural Experiment Station bulletins for purposes connected with their vocational agriculture classwork. He developed a technique which could also be used in predicting the difficulty of other types of agricultural reading materials used in secondary schools.

The investigation consisted of four general steps. They were:

1. Development of a valid and reliable criterion of difficulty.
2. Development of an objective and a reliable prediction technique.
3. Development of a generalized technique for use by the statistically untrained.
4. Estimation of the difficulty of fourteen Iowa Agricultural Experiment Station bulletins.

A regression equation used for the prediction of difficulty was developed, using as variables such structural elements as the percentage of illustrations, personal pronouns, average sentence length, prepositional phrases, and different technical words. The criterion used was the average rating of a group of educators concerning the difficulty of twenty-one books.

When the difficulty of each of fourteen Iowa Agricultural Experiment Station bulletins was predicted by means of the foregoing regression equation, these bulletins were found to be on an average more difficult than were most of the books used at the high school level.

Myster also developed a generalized technique for estimating difficulty which reduced greatly the amount of labor involved in analyzing the difficulty of reading material. This technique was used in predicting the lowest grade level at which agricultural text and reference materials may be used without causing difficulty. A work sheet for computing reading difficulty was also developed. He concluded that the use of such a technique could be justified as a routine procedure in a teacher's evaluation of the suitability of reading materials for high school pupils.

Bryant[1] undertook an investigation to determine the reading habits of the adults in North Platte, Nebraska, and to ascertain the relationship of certain factors to these habits.

The data were collected by means of personal interviews. Three-hundred-three adults selected on the basis of sex, marital status, age, education, salary, occupation, library users and non-library users and readers and non-readers, were interviewed.

Bryant found that the motives for reading varied with sex, marital status, educational advantages, income and profession. The

[1]Bryant, Alice W. Reading Habits of 303 Adults in North Platte, Nebraska, and Certain Factors Affecting These Habits. Unpublished M. S. Thesis. Ames, Iowa, Iowa State College Library. 1936.

amount of time spent reading also varied with sex, marital status, education and profession.

The number of books, magazines and newspapers read, increased with education advantages and income. Professional persons read more books, magazines and newspapers than other occupational groups. In this respect housewives ranked second.

Bryant also found that types of magazines read regularly varied according to sex, educational advantages and occupation. The groups with advanced educational advantages read more "general cultural" and "trade, technical and professional" magazines than did other groups. The parts of magazines usually read were found to vary with sex, marital status, educational advantages and occupation.

Longstaff and Laybourn[1] reported a study conducted by the Putman Publishing Company, the purpose of which was to call attention to fallacies inherent in "readership studies" as they have been commonly conducted and to suggest the need for more careful scrutiny of the results of such studies.

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[1]Longstaff, H. P. and Laybourn, G. P. What Do Readership Studies Really Prove? Journal of Applied Psychology. 33:585-593. December, 1949.

To appraise the validity of the "orthodox" type of readership study, a procedure was devised to compare the relative readership standings of three industrial magazines on the basis of three different readership-study techniques which yielded respectively, (1) the number of readers based on the number of "mentions" obtained in response to an original questionnaire employing "orthodox" readership-study techniques, (2) the number of readers corrected for "votes" obtained in a response to a follow-up questionnaire and (3) the number of readers corrected for "votes" and "disqualifying negative comments" obtained in response to the follow-up questionnaire.

The investigators found that in the "orthodox" type of study employing a questionnaire which asked "What magazines do you read?", only 47.3 per cent of those replying mentioned Magazine A even though practically everyone to whom the questionnaire had been sent was a "known reader" of Magazine A. On the basis of this original questionnaire, Magazine A ranked third in readership, Magazine C ranked second, and Magazine B ranked first.

A follow-up questionnaire was sent to those who, in replying to the original questionnaire, had failed to mention Magazine A, Magazine B, or Magazine C when the readers were asked, "Do you read this magazine (Magazine A, B, or C)?". The relative readership standings

obtained in the original questionnaire were reversed. Furthermore, when the comments made on the follow-up questionnaires were taken into account, the readerships of the three publications were changed still further. Longstaff and Laybourn concluded that the burden of proof rests on those who conduct "orthodox" readership studies to prove that their figures are measuring actual readership.

Donelson[1] made an analysis of the reader interest among Iowa farmers to determine whether the farm magazine should be made a "general" magazine for farm folk, whether its scope should be limited rather definitely to technical agricultural material, or whether some middle-of-the-road position between these two extremes should be taken.

Data were collected from 814 farm men and women by means of postal questionnaires, personal interviews and group interviews. Readers were classified in age groups according to sex, size of farm and whether they were owners or renters.

As most of the farmers in Iowa were believed to be subscribers to either Wallaces' Farmer or Successful Farming, both of which were

[1]Donelson, Loren E. Factors Influencing Reader Interest in Farm Journals. Unpublished M. S. Thesis. Ames, Iowa, Iowa State College Library. 1932.

published in Des Moines, Iowa, a greater share of the research dealt with what the farm men and women had read in these two publications.

Results of the study showed that farm men were definitely more interested in professional copy (copy pertaining to practical information relative to operation of the farm as a business) than in non-professional copy. At the same time, however, they indicated that they did considerable reading in non-professional subjects.

Donelson also found that men showed a strong interest in subject matter dealing with practical information on various phases of farming, such as soils, veterinary advice and farm crops. They were also interested in articles on taxation and money.

In 1941 Read[1] conducted a survey dealing with two Iowa State College publications in an effort to acquire information about farm readers. Briefly, the research consisted of questioning a large sample of readers of the Iowa Farm Economist and the Farm Science Reporter, magazine-type publications issued jointly by the Agricultural Experiment Station and Extension Service, concerning specific likes and dislikes regarding the editorial content and make-up of the two publications.

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[1]Read, C. Hadley. The Magazine-Type Publication as a Means of Popularizing Agricultural Research Information for Farm Readers. Unpublished M. S. Thesis. Ames, Iowa, Iowa State College Library. 1941.

A mailed questionnaire, composed of nine questions on a 6 x 9-inch, franked, self-addressed card, was mailed to 5,000 readers of each publication. Returned cards were received from 1,585 Reporter readers and 1,610 Economist readers.

Read found that, in general, the readers expressed satisfaction with the length of articles appearing in the two publications. Those who preferred a change voted twelve to one in favor of shorter articles. An overwhelming majority favored the continuance of the balance between pictures and printed matter.

In the matter of presentation of material in tables, there was a fairly even balance between those readers who preferred tables and those who preferred written discussion for presenting information. Charts and graphs were even more popular than tables for presenting the same information.

Read concluded that insofar as returns were concerned, the thirty-two per cent return on the mailed questionnaires indicated a "live" interest on the part of the readers. He made the assumption that the thirty-two per cent returning the cards were the ones most interested in the publication, and, on the same basis, assumed that the seventy per cent who didn't return cards were fairly well satisfied with the publication.

Wissler[1] conducted an investigation in 1945 to determine the reader acceptance of various types of articles, fiction, and features which might be included in a farm magazine circulating in several counties in the vicinity of San Jose, California.

The survey was restricted to farmers engaged in fruit and nut farming, poultry farming, vegetable farming and field crop farming. Therefore, the final questionnaire was designed to test farmers operating any of these four classes of farms.

The questionnaire used was built around sixty sample titles of articles on subjects, agricultural in nature, thought to hold some interest for farmers. The respondent was asked "Would articles with the following titles interest you very much, slightly or not at all?"

Wissler found that farmers in the area studied had practically no interest in reading articles about agricultural problems and programs in other states in the nation.

Irrigation as a topic ranked first with field crop farmers and vegetable farmers, and second with fruit and/or nut farmers, but it held little interest for poultry farmers.

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[1]Wissler, Ray F. A Testing of Reader-Acceptance of Content for a Proposed Weekly Farm Magazine. Unpublished M. A. Thesis. Palo Alto, California, Stanford University Library. 1947.

Insects and plant pests ranked first and third respectively with fruit and/or nut farmers and vegetable farmers, but it ranked only sixth with poultry farmers and field crop farmers.

The farm as a business was among those topics that held considerable, but not high, interest for all four classes of farmers. Interest in the remaining topics was low, although farm engineering and the airplane in agriculture held considerable interest for certain classes of farmers.

Farm readers, when asked what type of articles they would like to read in a farm-journal supplement, requested "stories", historical articles and biographical articles in a number of instances. The total of such requests was as high as was the number of requests for any one specific type of agricultural article.

One of the most extensive surveys of the characteristics of the readers of a magazine-type publication was conducted by the Meredith Publishing Company in 1950[1]. The purpose of the investigation was two-fold: (1) to show significant data about Better Homes and Gardens newsstand-buyer and subscriber families - their homes, appliances,

[1]Better Homes and Gardens Reports on its Subscribers and Newsstand Buyers. Meredith Publishing Company. Des Moines, Iowa. 1951.

family interests, and habits, (2) To help Better Homes and Gardens editors, advertisers and their agencies by defining characteristics of all of the magazine's reader-families.

To get the names of a representative sample of newsstand buyers, a brief questionnaire was inserted in each of 4,000 copies of the April, 1950, issue of the magazine. The questions asked were simple, broad in scope and of equal interest to all recipients of the questionnaire. To get representative distribution of the questionnaires, one magazine with questionnaire was inserted in each twenty-third bundle of the magazines packaged for newsstand distribution. To increase the percentage of return, each respondent was promised a dollar bill for his reply. A total of 1,881, or forty-seven per cent, of the buyers returned the questionnaire. From this list of 1,881 names of newsstand buyers, a sample of 1,500 names, proportional to newsstand distribution by states was drawn at random. A cross-section sample of 1,446 subscribers names was drawn from the magazine's subscription list.

A twelve-page printed questionnaire booklet was mailed in June, 1950, to the sample of subscribers and newsstand buyers. A dollar bill was enclosed with each of the questionnaires as a token of appreciation for the respondent's help.

The questionnaire was designed to get information about the readers such as marital status, age, size of family and age of children. Information pertaining to the homes of readers such as home ownership, type and size of dwelling, heating system and remodeling was also acquired.

Five days after the questionnaires were mailed, a follow-up card, urging return of the questionnaire, was mailed to each person in the sample. In mid-July a second letter, along with a keyed questionnaire, was sent to all nonrespondents.

To determine if there were any differences between the early and late respondents, a comparison of 223 returns from late respondents and 767 early returns was made for sixteen items. A chi-square analysis for the sixteen items gave a combined chi square of 8.237 which was nonsignificant at the five per cent level of probability. The editors of the magazine concluded that the early and late respondents were similar.

At the time the returns were closed, the newsstand section had produced 1,370 usable returns (91%); the subscriber section 1,230 returns (85%). To provide data representative of the magazine's primary reader-families, data from the two sections were weighted according to relative numbers of subscribers and newsstand buyers.

The results of the survey showed that the largest percentage of adult male subscribers was in the forty-six to seventy-year age group, the median age being 44.5 years. On the other hand, the largest percentage of adult male newsstand readers was in the twenty-six to thirty-five-year age group, the median 36.8 years. The median age of all adult male readers in the survey was 41.2 years.

When asked about reading interests, male readers said they were more interested in such items as vegetable gardening, lawns, trees, shrubs, new home plans, remodeling ideas, home maintenance, workshop ideas and how to use tools.

Studies reviewed here are those seemingly most typical of the investigations conducted in this particular area of communications research. No attempt has been made to review exhaustively the literature which is related to the subject of reader preference in a magazine-type publication. From a review of the literature in the field, it appears that the brunt of the research on agricultural publications has been pioneered to a large extent by private enterprise.

III. PREVIOUS IOWA FARM SCIENCE SURVEY

Iowa Farm Science magazine, a publication intended primarily for the farm people of Iowa, was established in July 1946 to disseminate timely agricultural and home economics information. Its purpose is to publish in popular form the results of research and to report on subjects related to agriculture and home economics.

A small editorial staff is responsible jointly to the Agricultural Experiment Station and to the Agricultural Extension Service for the publication of the magazine. The college publication board serves in an advisory capacity, but the editors of the magazine are responsible for its content.

Articles appearing in the magazine are written in a clear, concise, easy-to-read style to encourage reader interest. In order that timely material may be presented when it is most useful to the farm reader, articles are scheduled well in advance. Efforts are made by the editors to keep the magazine abreast of latest developments in its subject fields.

Specialists in specific fields are often asked to prepare material for the magazine. Research personnel voluntarily submit the results of their research for publication. Material in the areas of press articles,

open forum articles, news stories, opinions outside the author's professional field, and personal opinions not based directly upon research are usually considered unsuitable for publication. Such material is considered to be more appropriate for other available channels.

The average annual circulation has been between 18,000 and 20,000 subscribers, many of whom reside in other states and foreign lands. Today the magazine stands among the leaders of college publications presenting results of research to farm and home readers.

The May 1947 issue of Iowa Farm Science won first place when entered in competition with experiment station and extension service periodicals from other states at a meeting of the American Association of Agricultural College Editors. Entries in this competition were judged on their over-all make-up, content and readability. The entry for 1948 arrived at the annual meeting of the college editors too late to be judged. Issues in 1949 and 1950 were also awarded the highest rating, "excellent", in competition with periodicals from other states.

A. Objectives of the Survey

Late in 1949 the members of the Committee on Publicity and Publications (appointed by the dean of the Division of Agriculture)

became concerned about whether Iowa Farm Science was accomplishing its purpose. Questions as to the general acceptance of the magazine by its readers were raised. How much information was desired by readers on various subjects and were they getting it? What were the strong and weak points in the magazine's editorial content? How did readers prefer presentation of tabular matter? To answer these questions a mail survey of Iowa Farm Science readers was approved by the committee.

The primary objective of the survey was to find what the readers preferred to read. The secondary objective was to seek readers' opinions concerning the presentation of information by text, tables and graphs. Should statistical matter be presented in tabular or graphic form as well as in text?

B. Method of Procedure

The variety of subject matter content in Iowa Farm Science necessitated an extensive questionnaire if most topics covered were to be included. The editors of the magazine felt that one long questionnaire could be sent to a selected sample of the magazine's readers, or the list of questions could be divided into a number of smaller questionnaires as part of a larger survey. The latter method was chosen by the editors as being the better way to elicit the most answers by mail.

Fred E. Ferguson, bulletin editor, Iowa State College, prepared a questionnaire to send to the 1949 subscribers of Iowa Farm Science. Dr. Raymond J. Jessen of the Iowa State College Statistical Laboratory suggested that the schedule be divided into seven separate questionnaires, each one to be sent to a group of 2,000 readers. The questions were chosen, the survey designed and the questionnaires mailed under the direction of Ferguson. The computation of the returns and the analysis of the survey has been reported by Empey[1].

Questions were based upon articles which had appeared in the magazine or upon other topics to determine interest in new material. Ninety-one questions based on twenty-eight different subjects were divided into seven separate groups. Each of the seven groups of questions was printed on separate questionnaire cards which were numbered from one to seven. (Photostatic copies of questionnaires appear in the Appendix). Questions were worded requiring a MORE, LESS or SAME AMOUNT answer.

C. Questionnaire Returns

The survey questionnaires were sent to seven groups of 2,000 subscribers each, or 14,000 of the readers on the subscription list -

[1]Empey, Gene F. Reader Preference in a Magazine-Type Publication Presenting Farm and Home Information. Unpublished M. S. Thesis. Ames, Iowa, Iowa State College Library. 1949.

Table 1

Percentage of Questionnaires Answered to Total Questionnaires Returned

Questionnaire Number	Questionnaires Mailed	Questionnaires Returned	Questionnaires Answered	Percentage Answered to Total Returned
1	2000	1312	1077	82.1
2	2000	1335	1104	82.7
3	2000	1299	1071	82.5
4	2000	1313	1088	82.9
5	2000	1245	981	77.8
6	2000	1345	1132	84.2
7	2000	1291	1109	85.9
Total	14000	9140	7562	82.7

all Iowa residents. Of the 14,000 questionnaires mailed out, 9,140 were returned within forty-five days. As shown in Table 1 the returns on the seven questionnaires ranged from 1,245 to 1,345. Fifty-four per cent (7,562) of the respondents expressed opinions as to whether MORE, LESS or the SAME AMOUNT of information was desired.

The present study is an extension of the Empey study. The major purpose was to distinguish reading preferences when readers were classified on the basis of age, education, farming status and major source of farm income.

IV. METHOD OF PROCEDURE

As the initial step in obtaining further information about Iowa Farm Science readers, a self-addressed card was sent to all subscribers on the 1950 mailing list. The card was mailed with the December issue of the magazine. The subscriber lists are revised annually in accordance with regulations governing use of the free franking privilege granted the Agricultural Experiment Station and Agricultural Extension Service. To remain on the mailing list a subscriber was required to sign his name, place a stamp on the self-addressed card and mail it to the Bulletin Office. Each subscriber was also asked to give his occupation which, heretofore, had, in most cases, been unknown to the editors of the magazine.

By February 1951, a majority of the subscribers had returned the card. The occupations listed on the cards revealed the audience of Iowa Farm Science to be very heterogeneous as far as occupation was concerned. The occupations included not only farmers and homemakers, but also insurance salesmen, bankers, retailers, high school pupils, clergymen, doctors, instructors of vocational agriculture and a diversity of other occupations. As would be expected, the largest occupational group was composed of farmers or those readers whose occupational title was indicative of a close relationship to the management and operation of a farm.

Because Iowa Farm Science is designed primarily for the farm people of Iowa, and because farmers are the predominating group of subscribers, it would seem logical that any attempt to characterize the readers of the publication, or to show relationships between reader characteristics and reading preferences, should segregate the farm readers as a basis for such analysis. Because readers engaged in farming actually comprised the largest occupational group in the returned cards, it was decided for purposes of homogeneity to limit the investigation to farm readers.

For the purposes of this study, anyone listing his occupation as farming, farm owner, farm manager, farm landlord, farm renter, dairyman, hired hand, etc. was considered to be a farm reader. Readers with nonfarm occupational titles were excluded from the study. In order to obtain further homogeneity in the group, the study was restricted to male farmers residing within the state of Iowa.

The names and addresses of all subscribers classified as farm readers were thus compiled. These names were checked against the names of the 7,562 readers who had returned a completed questionnaire in the Empey study. Of the original 7,562 questionnaires, 3,582 were found to be completed by farmers for whom a name and address were available. Many subscribers who were classified as farmers had to be discarded

from the study because they had either returned an incomplete questionnaire or no questionnaire at all in the previous investigation.

During the week of March 15, 1951, a business-reply card was sent to 3,582 farmers on the Iowa Farm Science mailing list for whom complete information was available. The card was mailed with a covering letter in an Iowa Farm Science envelope. (Photostatic copies of the card and letter appear in the Appendix.)

Readers were asked to give information on their major sources of farm income, farming status, education, Iowa State College attendance and age by making a check in an appropriate space provided. Space was provided for the reader to sign his name and give his address and occupation if he so desired. The reader was not required to furnish postage in order to return the card. Each card was assigned a number to be used in identifying returned cards that were not signed and to identify cards of late and nonrespondents.

A follow-up letter with a questionnaire card enclosed was mailed to nonrespondents on April 13, 1951. (A copy of the follow-up letter appears in the Appendix.) In addition, the editors of Iowa Farm Science made a special plea to the nonrespondents in the April issue of the magazine. Only the cards that were received on or before May 25, 1951, were used in the study.

Additional information such as the date the questionnaire was returned, the county and farming area in which the respondent lived, was placed on each returned questionnaire. The questionnaires were coded and the data were transferred to IBM cards for tabulation. To facilitate tabulation, the data supplied by the questionnaire in the Empey study and that supplied in the present study were placed on the same IBM card for each reader in the study.

To determine relationships between reading preferences, as indicated by the responses on the Empey questionnaire, and any of the information used in the present investigation, analysis of variance and chi square were computed as tests of significance.

The following hypotheses were tested:

1. The subject matter reading preferences of Iowa farmers who read Iowa Farm Science are not related to their source of farm income, farming status, age, education, or farming area.

2. Preferences of farm readers of Iowa Farm Science concerning the method of presentation of information are not related to the education or age of the reader.

An attempt was also made in this study to determine any differences between those readers who returned the questionnaire at a relatively early date and those who were classified as late respondents. Those two groups were compared on the basis of age, education, farming status, Iowa State College attendance and source of farm income.

To determine if the farm readers in the present study were representative of the rural male population of Iowa, the two groups were compared on the basis of age, geographical location and source of farm income. Preliminary data from the 1950 U. S. Census were used in making these comparisons.

A. Definition of Terms

In order to process and analyze the data suppled by the farm readers, it was necessary to make certain classifications and to define certain terms used in the investigation. For the purposes of this study the following classifications and definitions were used:

1. Major Source of Farm Income

   a. Beef-Hog. The major source of farm income was considered to be "Beef-Hog" when both of these enterprises were the predominating major sources of income from the livestock enterprises. Small grains, corn, poultry, etc. may or may not have supplemented these two sources of income.

   b. Dairy-Hog. The major source of farm income was considered to be "Dairy-Hog" when both of these enterprises were the predominating major sources of income from the livestock enterprises. Small grains, corn, poultry, etc. may or may not have supplemented these two sources of income.

   c. Cash Grain. The major source of farm income was considered to be "Cash Grain" when small grains, corn or soybeans were the predominating sources of farm income.

d. Specialty. The major source of farm income was considered to be "Specialty" when the farm income seemed to be derived from a single or highly specialized enterprise such as sheep, poultry, fruits or vegetables, seed corn, etc.

e. General. The major source of farm income was considered to be "General" when several enterprises seemed to contribute equally as sources of the reader's farm income.

2. Farming Status

a. Landlord. A "Landlord" was defined as a reader who indicated his farming status to be either landlord, landlord and manager, or landlord and renter.

b. Full Owner. A "Full Owner" was defined as a reader who indicated his farming status to be either owner-operator, owner-operator and manager, or owner-operator and landlord.

c. Part Owner. A "Part Owner" was defined as a reader who indicated his farming status to be owner-operator and renter.

d. Manager. A "Manager" was defined as a reader who indicated his farming status to be that of manager.

e. Tenant. A "Tenant" was defined as a reader who indicated his farming status to be that of renter or renter and manager.

3. Education

a. High School Attendance was defined as a completion of either the ninth, tenth, or eleventh grades, but less than twelfth grade.

b. High School Graduation was defined as a completion of the twelfth grade, but less than one year of college.

c. College Attendance was defined as a completion of at least one year of college work, but less than four.

d. College Graduation was defined as a completion of at least four years of college work.

The foregoing classifications and definitions were used in describing the readers in the study and for purposes of testing hypotheses.

For the purposes of the present study the terms "reader" and "respondent" are used interchangeably.

V. CHARACTERISTICS OF READERS

Of the 3,582 questionnaires mailed to readers of Iowa Farm Science, 3,171, or 88.5 per cent, were returned by May 25, 1951. In editing the returned questionnaires, seventy had to be discarded because (1) they had been completed and signed by women, (2) the reader was deceased, (3) the respondent could not be identified, or (4) an insufficient amount of information had been supplied by the respondent.

Thus, 3,101 useable questionnaires, or 86.6 per cent, of those mailed to readers were used in the present study. The number of questionnaires mailed and the number returned by early and late respondents are shown in Table 2. As shown in Table 2, 2,536 questionnaires, or 70.8 per cent, were returned by early respondents and 565, or 15.8 per cent, were returned by late respondents.

It can be seen in Table 2 that the distribution of returns, when classified according to the questionnaire the readers completed in the Empey study ranged from 405 for Questionnaire No. 5 to 469 for Questionnaire No. 4.

It was noted that a few questionnaires were still being received from readers as late as mid-August. According to the editors of Iowa

Table 2

Total Questionnaires Mailed and Useable Questionnaires Returned by Early and Late Respondents

Questionnaire Number	Questionnaires Mailed	Questionnaires Returned (Early Respondents)	Questionnaires Returned (Late Respondents)	Total
1	518	372	78	450
2	519	362	86	448
3	488	354	75	429
4	558	387	82	469
5	457	331	74	405
6	536	372	90	462
7	506	358	80	438
Total	3582	2536	565	3101

Farm Science, these late returns were not unusual. Previous mail surveys conducted by the editors had demonstrated that questionnaires would trickle in from readers as late as a year following the date the questionnaires had been mailed.

One of the purposes of the present study was to learn more about the Iowa Farm Science reader - where he lives, his age, educational background, source of farm income and farming status. Whenever possible in this study, the foregoing characteristics of the Iowa Farm Science reader have been compared with the characteristics of the male farm population of Iowa. Fortunately, current information regarding some of the characteristics has been made available in the 1950 U. S. Census of Agriculture (Preliminary)[1] and the 1950 U. S. Census of Population (Preliminary)[2]. This information has been utilized in the present investigation.

A. Geographical Distribution

It was of interest in this study to know the geographical distribution of the 3,101 farm readers who returned a completed questionnaire. Therefore, the post office address of each respondent was

[1] U. S. Bureau of Census. Preliminary 1950 Census of Agriculture. Iowa. Series AC 50-2, No. 42. January 26, 1951.

[2] U. S. Bureau of Census. Preliminary 1950 Census of Population. Characteristics of the Population of Iowa. Series PC-12, No. 12. July 15, 1951.

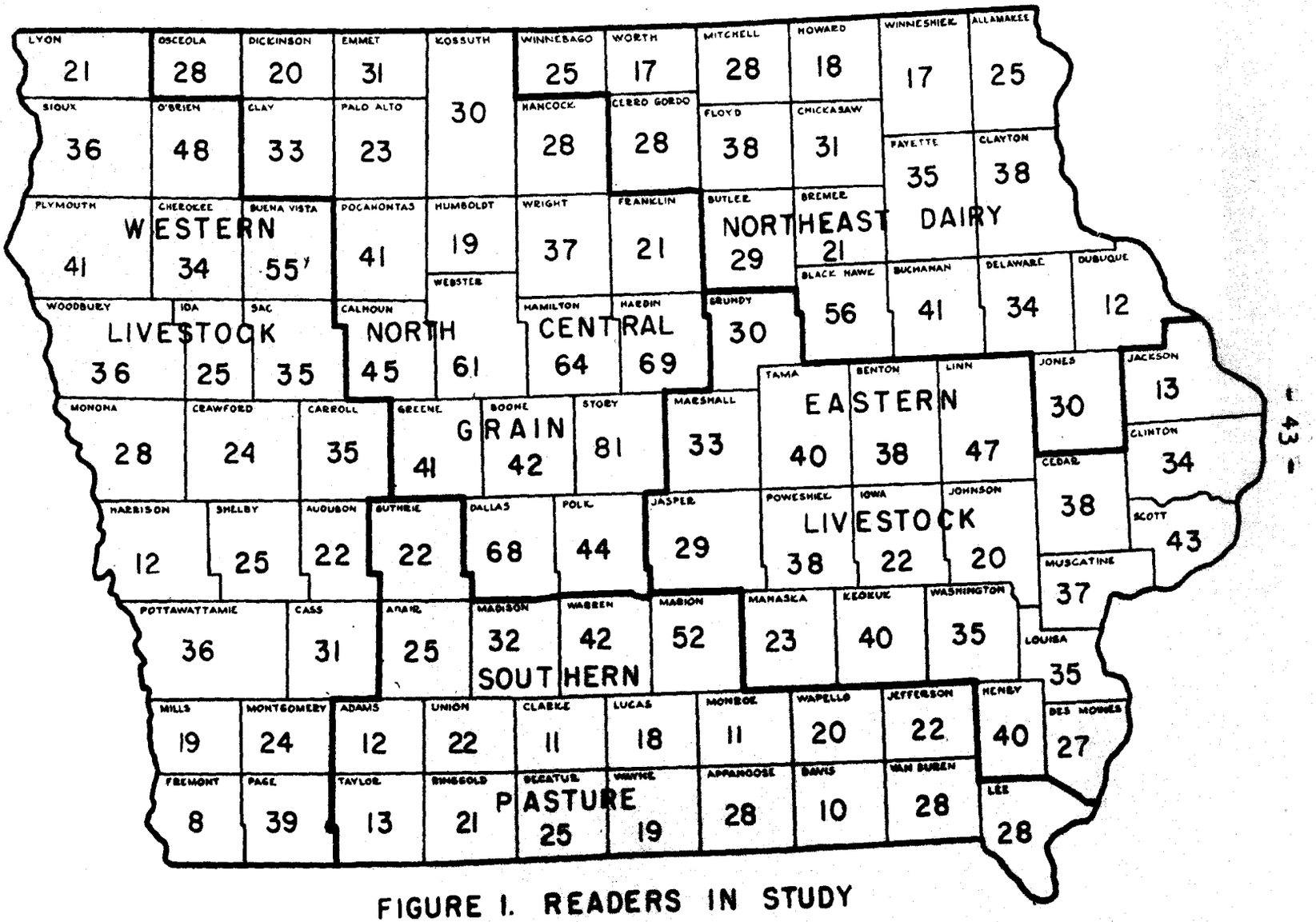

FIGURE 1. READERS IN STUDY

noted and summarized by county and farming area. The distribution of the 3,101 respondents by counties is shown in Figure 1.

An inspection of the data in Figure 1 indicates that the present sample of readers was widely dispersed throughout the ninety-nine counties in Iowa. The number of readers in each county ranged from eight in Fremont county to eighty-one in Story county. The mean number of readers for each of the ninety-nine counties in the state was approximately thirty.

A more satisfactory comparison of the number of respondents in each county was had by reporting the number of readers per thousand farms in each county. The 1950 U. S. Census of Agriculture (Preliminary) was used in adjusting the total response in each county to a comparable standard of measurement. The totals for each county are shown in Figure 2.

An inspection of the data in Figure 2 reveals that the number of respondents per thousand farms ranged from 5.1 in Harrison county to 36.6 in Story county. The mean number of respondents in each county in the state was approximately sixteen.

It was noted that Story county had the highest number of readers per thousand farms. Undoubtedly such a high response was partially a

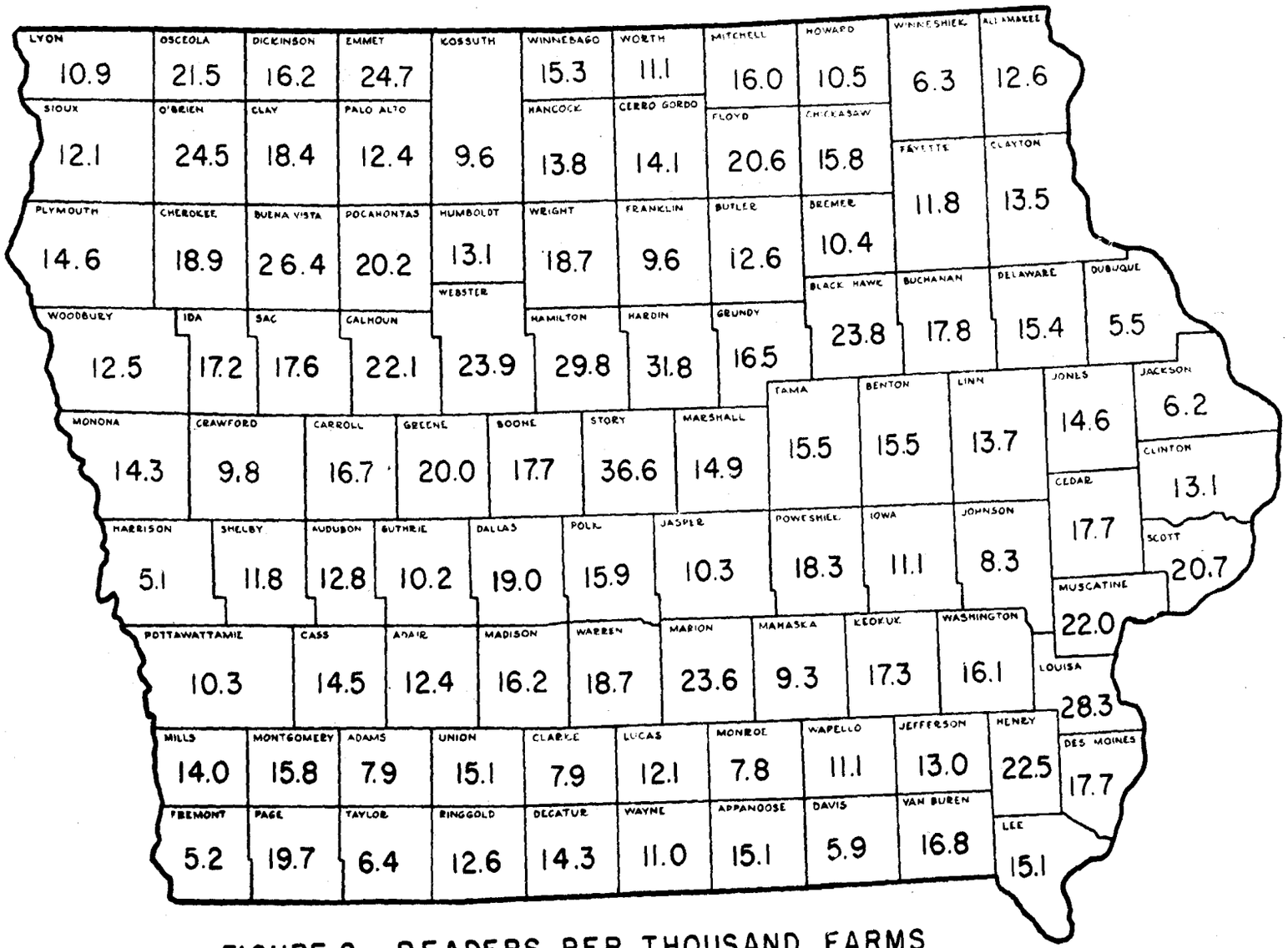

FIGURE 2. READERS PER THOUSAND FARMS

result of the close proximity of these respondents to the Iowa State College which is located in Story county. Further inspection of Figure 2 reveals that a majority of the counties which border on Story county also have an above average number of readers who returned questionnaires.

Distance from the college should not be considered to be the only factor associated with the size of response. As shown in Figure 2, three counties on the southeastern border of the state and several counties in the northwestern part of the state are well above the state mean in numbers of respondents per thousand farms. Many of the counties in the fringe areas of the state do however, contain fewer than the mean number of the state as a whole.

B. Source of Farm Income

An attempt was made in this study to discover which farming enterprises the readers had on their farms and their relative importance as sources of farm income. Readers were asked to check ten major kinds of livestock and crops on the basis of their contribution to the farm income. Information was provided for the following enterprises: sheep, beef cattle, hogs, dairy, poultry, corn, fruits or vegetables, grasses and legumes, soybeans and small grains.

Of the 3,101 readers in this study who returned questionnaires, 3,084 gave information on their source of farm income.

The responses to each of the enterprises were summarized and are presented in Table 3.

The importance of sheep in the farming program of the readers has been summarized and is shown in Table 3. An inspection of the data indicates quite clearly that sheep contributed very little to the farm income of the readers. Over eighty-three per cent of the readers did not have sheep on their farms. Only about one in every twenty readers indicated that sheep was a major source of their farm income. This ratio does not seem to be out of proportion to that which exists in the farming programs of the state as a whole. As reported in the 1950 U. S. Census, only 1.3 per cent of the farm income from all Iowa farm commodities was derived from the sale of sheep, lambs and wool.

When the responses to the beef cattle enterprise were summarized, as shown in Table 3, a much different picture was presented. The data indicate that beef cattle were more firmly entrenched in the farming program of the readers. Approximately two-thirds of the readers had beef cattle on their farms, with a majority of the farmers in this group reporting beef cattle as a major source of their farm income. Data in the 1950 U. S. Census indicate that the sale of cattle and calves contributed approximately twenty-nine per cent of the income received from all Iowa farm commodities and thirty-six per cent of the income derived from livestock.

Table 3

Source of Income From Farm Enterprises

Farm Enterprise	Source of Income: Major N	Major %	Minor N	Minor %	None N	None %	No Data N	Total
Sheep	161	5.2	351	11.4	2572	83.4	17	3101
Beef Cattle	1336	43.3	720	23.4	1028	33.3	17	3101
Hogs	2352	76.3	469	15.2	263	8.5	17	3101
Dairying	697	22.6	1128	36.6	1259	40.8	17	3101
Poultry	435	14.1	1970	63.9	679	22.0	17	3101
Fruits or Vegetables	20	0.6	791	25.7	2273	73.7	17	3101
Small Grains	407	13.2	2365	76.7	312	10.1	17	3101
Corn	1315	42.6	1631	52.9	138	4.5	17	3101
Grasses and Legumes	483	15.7	2151	69.7	450	14.6	17	3101
Soybeans	358	11.6	1028	33.3	1698	55.1	17	3101

When the data concerning hogs were summarized it was found that better than nine out of ten readers had hogs on their farm, with a majority of these readers reporting that hogs were a major source of farm income. Because the sale of hogs contributes in a major way to the farm income on Iowa farms, the importance of hogs to the present sample of farmers does not seem to be unusually high. Data in the 1950 U. S. Census indicate that the income from hogs on Iowa farms constituted thirty-seven per cent of the income received from all farm commodities, and forty-five per cent of the income derived from livestock enterprises.

The data provided by the readers concerning dairying as a source of farm income are shown in Table 3. It can be seen that 1,259 readers, or approximately two fifths, did not have the dairy enterprise in their farming program. Of those readers whose farming program did include dairying, a majority said that it was not a major source of their farm income. As reported in the 1950 U. S. Census, dairy products contributed 6.5 per cent of the farm income obtained from all Iowa farm commodities, and eight per cent of the total income obtained from livestock enterprises. It should be pointed out that much farm income is derived from the sale of dairy cattle and calves, but such income is classified under the general heading of cattle and calves which also includes beef animals.

The responses of the readers concerning the poultry enterprise are presented in Table 3. An inspection of the data indicates that approximately four out of five readers in the study had a farming program which included poultry. However, most of these readers indicated that poultry was not a major source of farm income, but was somewhat of a supplementary enterprise, as it usually is on the typical Iowa farm. As reported in the 1950 U. S. Census, poultry and poultry products contributed approximately seven per cent of the total income from all Iowa farm commodities.

The responses of the readers who gave information on fruits or vegetables indicate that nearly three-fourths of the readers had neither fruits nor vegetables on their farm. Only twenty readers, or less than one per cent, had a farming program in which fruits or vegetables contributed as a major source of farm income. In 1950, Iowa's fruits and vegetables contributed less than one per cent of the total income from all farm commodities.

As shown in Table 3, nearly nine out of ten readers indicated that small grains were a part of their farming program. However, an inspection of the data shows that on a majority of these farms small grains did not contribute as a major source of farm income, but, rather, served as a supplemental source. Many readers reporting small grains

as a major source of farm income were probably farming on a cash grain basis where the grain was not being marketed through a livestock feeding program.

The responses to the corn enterprise are shown in Table 3. An inspection of the data reveals that more than ninety-five per cent of the readers grew corn on their farms. This proportion does not seem unusual when the farming program of the state is analyzed.

As reported by the Iowa Crop and Livestock Reporting Service, 50.3 per cent of all Iowa cropland harvested in 1948 was planted to corn. The average corn acreage in Iowa during the 1937-1946 period was more than ten million acres. Considering the statewide distribution of the present sample of farmers, one would expect to find a majority whose farming program included corn. It was noted that more than two out of five farmers indicated that corn was a major source of income. Corn was responsible for 53.4 per cent of the total crop income in Iowa in 1950, and 9.6 per cent of the income from all farm commodities.

The number of readers reporting on grasses and legumes as a source of farm income is shown in Table 3. More than four out of five readers indicated that their farming program included grasses and legumes. However, only a small percentage of these readers

indicated that grasses and legumes contributed as major sources of the farm income. As is true on a number of farms in the state, these crops tend to supplement the major livestock enterprises and are vitally important in the crop rotation program. For the state as a whole, grasses and legumes constituted approximately one per cent of the total income from all farm commodities in 1950.

Less than fifty per cent of the readers reported soybeans as either a major or minor source of income on their farms. Only 358 of the readers reported that soybeans were a major source of farm income. As far as the farmers in the present study are concerned, soybeans was a crop which, when a part of the cropping program, tended to exist as a minor contributor to the farm income. According to 1950 U. S. Census data, four per cent of the total income from all farm commodities in Iowa was obtained from the sale of soybeans. However, soybeans contributed approximately twenty-three per cent of the farm income derived from farm crops in Iowa.

On the basis of the responses on the foregoing livestock and crop enterprises, the readers were classified according to their major source of farm income. The major sources of farm income of the readers are shown for the various questionnaires in Table 4.

An inspection of the data in Table 4 shows that the readers whose source of farm income was classified as beef-hog comprised the largest

single group or nearly forty per cent of all readers. The second largest group was composed of readers whose major source of farm income was classified as general. The two groups of readers whose farm income was classified as specialty and cash grain comprised only about ten per cent of all readers in the study.

Table 4

Major Sources of Farm Income and Questionnaires Returned

Major Source of Farm Income	Questionnaire Number 1	2	3	4	5	6	7	Total
Beef-Hog	180	168	166	176	162	186	158	1196
Dairy-Hog	94	89	89	116	87	87	72	634
Cash Grain	18	22	22	23	25	29	18	157
Specialty	27	28	17	17	16	32	23	160
General	129	139	133	134	113	127	162	937
No Data	2	2	2	3	2	1	5	17
Total	450	448	429	469	405	462	438	3101

Since in later analyses it was necessary to break down the total sample of 3,101 readers into seven groups, depending upon which questionnaire was answered, a test was made to ascertain whether the distribution of major source of farm income was similar from one

questionnaire to another. For this purpose a chi-square value was computed after eliminating the seventeen readers for whom no data were available. A nonsignificant chi-square value of 29.253 was found, indicating the uniformity of the respondents when classified by major source of farm income for each of the seven questionnaires.

C. Farming Status

For purposes of description, the readers were classified on the basis of farming status and are shown in Table 5. There were 3,094 readers for whom complete data on farming status were available.

As shown in Table 5, the largest group of farm readers were full owners. Nearly one out of every two readers were so classified. The readers who were classified as tenants were the next largest group, comprising more than one-fourth of all readers. Only fifty-six readers, or less than two per cent, were farm managers. Forty-nine readers had indicated that their farming status did not fit any of the major classifications on the questionnaire and therefore listed their farming status as "other". Less than one per cent of the readers in the present investigation were classified as hired hands.

It is interesting to note that 374, or nearly one in every eight, readers were landlords.

Table 5

Farming Status and Questionnaire Returned

Farming Status	Questionnaire Number							Total
	1	2	3	4	5	6	7	
Landlord	47	47	56	56	56	67	45	374
Full Owner	225	211	191	232	200	207	208	1474
Part Owner	28	41	35	37	35	39	33	248
Manager	6	5	5	10	8	10	12	56
Tenant	134	135	138	121	93	128	127	876
Hired Hand	1	3	0	6	4	3	0	17
Others	9	6	4	6	7	8	9	49
No Data	0	0	0	1	2	0	4	7
Total	450	448	429	469	405	462	438	3101

In later analyses it was necessary to break down the total sample of 3,101 readers into seven groups, depending upon which questionnaire was answered. Therefore, a test was made to ascertain whether the distribution of farming status was similar from one questionnaire to another. For this purpose a chi-square value was computed after eliminating the seven readers for whom no data were available, and combining the hired hands, managers and others. A nonsignificant chi-square value of 26.268 was found, indicating the uniformity of the respondents when classified by farming status for each of the seven questionnaires.

D. Education

The item on education as it appeared on the questionnaire gave the reader an opportunity to indicate the highest grade he had completed in school. For the purposes of statistical analysis, the data on education were placed on the following five-point scale continuum: (1) Less than high school, (2) Attended high school, (3) Graduated from high school, (4) Attended college, and (5) Graduated from college.

The readers for whom complete data on education were available were classified on the foregoing basis and are shown in Table 6. Seventy-nine readers did not report their educational level.

An inspection of the data in Table 6 reveals that the largest single group of readers (33.5 per cent) were high school graduates. Approximately one-fourth of the readers had an educational level of eighth grade or less.

Table 6

Education and Questionnaire Returned

Educational Level	Questionnaire Returned							Total
	1	2	3	4	5	6	7	
Less than High School	113	127	131	147	108	107	112	845
Attended High School	57	51	55	52	45	49	46	355
Graduated from High School	153	155	121	147	150	145	142	1013
Attended College	87	79	69	75	63	82	70	525
Graduated from College	34	28	44	38	30	57	53	284
No Data	6	8	9	10	9	22	15	79
Total	450	448	429	469	405	462	438	3101

It is interesting to note that 809 readers, or more than one-fourth of the respondents had attended college and 284 of these had graduated from college. A few readers classified as college graduates indicated on their questionnaire that they had taken additional post graduate work. The mean grade level of the readers when based on the present continuum was approximately 11.0 years.

Because the 1950 U. S. Census was not yet available as far as educational information was concerned, no comparison could be made between the readers of Iowa Farm Science and the general male population of Iowa. However, the 1940 U. S. Census reported figures which showed that the median grade level in Iowa was 8.2 years for farm men. Undoubtedly this level has increased during the past ten years. It is doubtful however, that the educational level of the general male farm population in Iowa has reached the level presented by readers in the present study. As stated by the editor of Iowa Farm Science[1]:

> We have wondered whether our readers were above the average for the Iowa farm population in educational level. We have felt fairly certain that they were for several reasons. First of all, for about eight years we have not publicized Iowa Farm Science by radio, etc., or made any effort to get additional subscribers because of paper shortages during the war and limited budgets since. Furthermore, those on the mailing list must subscribe each year or their names are dropped. Under these conditions, we have assumed that only alert, progressive farmers probably have heard about the magazine or have taken the trouble to send in their names each year to remain on the list. Although we have worked under the assumption that our readers probably have more than an average education, we have tried to write so that any Iowa farmer who reads farm magazines could understand what we publish. If this "average" man gets on the mailing list we want him to be able to understand what we have written. We always try to write for this average farm reader.

Since in later analyses it was necessary to break down the total sample of 3,101 readers into seven groups, depending upon which

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[1]Ferguson, Fred E. Bulletin Editor at the Iowa State College. Private Communication. August, 1951.

questionnaire was answered, a test was made to ascertain whether the distribution of education was similar from one questionnaire to another. For this purpose, a chi square was computed after eliminating the seventy-nine readers for whom no data were available and combining those who had attended college with those who had graduated from college. A nonsignificant chi-square value of 23.491 was found, indicating the uniformity of the respondents when classified by education for each of the seven questionnaires.

It was of interest to note how many of the readers had attended the Iowa State College. Therefore, the readers were classified on the basis of non-college attendance, Iowa State College attendance and attendance at other colleges or universities, and are shown in Table 7.

An inspection of the data in Table 7 shows that of the 809 readers who had attended college, 457 had attended the Iowa State College. Whether or not this proportion was representative of the total number appearing on the subscription list of Iowa Farm Science is not known. The "halo" effect which has been found to exist in many studies in the field of public opinion research, may have affected the response of former Iowa State College students in the present study.

To ascertain whether the distribution of college attendance was similar from one questionnaire to another, a chi square was computed after eliminating the seventy-nine readers for whom no data were available. A nonsignificant chi-square value of 17.444

Table 7

College Attendance and Questionnaire Returned

College Attendance	Questionnaire Number 1	2	3	4	5	6	7	Total
None	323	333	307	346	303	301	300	2213
Iowa State College	70	57	66	63	53	80	68	457
Other	51	50	47	50	40	59	55	352
No Data	6	8	9	10	9	22	15	79
Total	450	448	429	469	405	462	438	3101

was found, indicating the uniformity of the respondents when classified by college attendance for each of the seven questionnaires.

E. Age

Iowa Farm Science readers were requested to indicate their age by checking one of the age levels shown on the questionnaire form in the Appendix. For purposes of comparison with other male farm groups, the age levels used were similar to the U. S. Census classification.

The 3,087 readers for whom information on age was available, were classified on the basis of age level and the resulting classification is shown in Table 8. It is interesting to note that only fourteen readers failed to give information concerning their age, whereas a total of seventy-nine had failed to indicate their educational level.

An inspection of the data in Table 8 shows that approximately one-half of the readers were found to be in the two age groups of thirty-five to forty-four years and forty-five to fifty-four years. As would be expected on a publication of this type, there were fewer readers in the age group under twenty-five years than in any other group. Male farm people at this age level may not have become established in farming to the extent that they would subscribe for and rely upon a magazine of this type to assist in their farming program.

Inasmuch as 1950 U. S. Census data concerning age were available for the male rural farm population of Iowa, the age level of the readers in this study was compared with this general farm group. The percentage of readers in each of the age groups has been summarized as follows:

	Iowa Farm Science Readers (Percentage)	Male Rural Farm Population of Iowa (Percentage)
Under 25	2.9	12.2
25 - 34	21.6	21.4
35 - 44	25.2	21.7
45 - 54	24.0	19.1
55 - 64	17.2	14.7
Over 64	9.1	10.9

The foregoing comparison shows a striking similarity in the percentage of farmers found in the age groups 25 - 34 years, and the group over 64 years. Furthermore, the age groups 35 - 44 years, 45 - 54 years and 55 - 64 years do not vary more than five percentage points. The greatest difference exists in the group under 25 years. In calculating the percentages for the general Iowa rural farm population, only one-half of the number of farmers in the age group 15 - 24 years were used. This procedure was followed in order to place the Iowa Farm Science readers on a somewhat comparable basis in terms of numbers that were likely to have been in that age group. It is doubtful that very many readers in the present study would be in the age group below fifteen years; therefore, this age group was not used in computing the percentage figures for the male rural farm population of Iowa.

Table 8

Present Age and Questionnaire Returned

Present Age	Questionnaire Number 1	2	3	4	5	6	7	Total
Under 25 Years	10	16	5	22	14	13	11	91
25 - 34 Years	103	99	99	92	92	106	75	666
35 - 44 Years	124	101	103	126	86	117	122	779
45 - 54 Years	94	117	98	106	101	106	119	741
55 - 64 Years	79	67	88	78	62	81	75	530
Over 64 Years	38	48	34	43	48	36	33	280
No Data	2	0	2	2	2	3	3	14
Total	450	448	429	469	405	462	438	3101

It was of interest to note that the 1950 U. S. Census of Population (Preliminary) reported the median age of rural farm males to be 27.9 years, whereas the rural nonfarm and urban median ages were reported as 33.8 years and 31.4 years respectively.

Since in later analyses it was necessary to break down the total sample of 3,101 readers into seven groups, depending upon which questionnaire was answered, a test was made to ascertain whether the distribution of age was similar from one questionnaire to another. For this purpose a chi-square value was computed after eliminating the fourteen readers for whom no data were available. A nonsignificant chi-square value of 42.782 was found, indicating the uniformity of the respondents when classified by age for each of the seven questionnaires.

At the time this study was made, the only 1950 census data available for farmers was the age and source of farm income distribution. It is not likely, however, that the education or farming status of the readers of Iowa Farm Science represents a good cross-section of the farmers of the state as a whole. Throughout this study the interpretations are made in terms of the readers of Iowa Farm Science rather than Iowa farmers.

VI. ANALYSIS OF EARLY AND LATE RESPONSE

There is always a question as to whether the group which answers a questionnaire represents a fair sampling of the reading public. It was of interest in this investigation to know if the readers who responded were representative of the total group who had received questionnaires. As pointed out by Ferber[1], researchers are only too well aware of the frequency with which nonrepresentativeness enters into a mail survey. In fact, the desirability - and sometimes necessity - of using mail ballots under certain conditions, has led to considerable experimentation with methods of detecting or compensating for bias in the mail-type survey.

As reported by Suchman and McCandless[2], as a general rule, those interested in a particular subject are more likely to reply. Furthermore, according to Benson[3], the highest rate of return on attitudinal surveys is obtained from those whose opinions are most extreme. Franken[4]

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[1]Ferber, Robert. The Problem of Bias in Mail Returns: A Solution. Public Opinion Quarterly. 12:669-676. 1948-1949.

[2]Suchman, E. A. and McCandless, B. Who Answers Questionnaires? Journal of Applied Psychology. 24:758-769. 1940.

[3]Benson, L. E. Mail Surveys Can Be Valuable. Public Opinion Quarterly. 10:234-241. 1946.

[4]Franken, Richard B. The Attention Value of Newspaper Advertisements. New York, New York University. 1925.

has reported that persons who reply tend to place their reading interests on a higher plane than they actually are. Salisbury[1] found that response rates on mail-type questionnaires vary with income level and educational status.

In view of such evidence, what assurance was there that there was an absence of bias in the present sample? Were the characteristics of those readers who did not respond different from those of the respondents?

In an attempt to answer these questions an ideal solution would be to interview all nonrespondents, or a randomly selected subsample, and compare their replies with those of the respondents. However, from the standpoint of both time and finance, such a procedure was not feasible in the present investigation. As reported by Hansen and Hurwitz[2], even though formulas are available to minimize the number of follow-up personal interviews required to achieve a certain prediction, the cost of such follow-ups is disproportionately high relative to the cost of the mail sample.

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[1]Salisbury, P. Eighteen Elements of Danger in Making Mail Surveys. Sales Management. 42, No. 4:28. 1938.

[2]Hansen, M. H. and Hurwitz, W. N. The Problem of Non-Response in Sample Surveys. Journal of the American Statistical Association. 41:517-529. 1946.

Probably the most feasible procedure to detect differences between respondents and nonrespondents in the present study, would be to employ a technique advocated by Clausen and Ford[1]. Such a technique consists of making a comparison between the original returns and returns received from all mail follow-ups of nonrespondents sent out at different periods of time. This procedure is based on the assumption that any differences on a certain issue between mail respondents and nonrespondents would be reflected in the replies of the early respondents as compared with those of later ones. Clausen and Ford consider the late respondents as "almost nonrespondents" and therefore most similar to those who do not reply.

Because there was no reason to suspect that the sample in the present study would tend to react any differently when such a technique was employed, an attempt was made to determine differences between early and late respondents. If, on the basis of response in the present investigation, it could be demonstrated that differences between characteristics of early and late respondents actually existed, and assuming that the characteristics of the late respondents were more nearly like the nonrespondents than they were the early respondents, much light could be thrown on the characteristics of the readers who did not return questionnaires.

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[1]Clausen, J. A. and Ford, R. N. Controlling Bias in Mail Questionnaires. Journal of the American Statistical Association. 42:498-511. 1947.

In order to determine if there were differences in characteristics between early and late respondents, the two groups were classified on the basis of their major source of farm income, as shown in Table 9, and chi square computed.

Table 9

Source of Farm Income of Early and Late Respondents

Source of Farm Income	Type of Response		Total
	Early	Late	
Beef-Hog	996	200	1196
Dairy-Hog	535	99	634
Cash Grain	120	36	156
Specialty	122	38	160
General	752	185	937
No Data	11	7	18
Total	2536	565	3101

A chi-square value of 11.913 was found which was significant at the five per cent level, thus indicating that there were differences between early and late respondents when they were classified according to their major source of farm income.

In the late respondent group, the number of farmers whose major source of farm income was classified as cash grain, specialty or general, was greater than would normally be expected if only chance factors were in operation. On the other hand, the number of late respondents whose major source of farm income was beef-hog or dairy-hog was less than would normally be expected. No attempt was made to determine the reasons for such a discrepancy. Some factor or factors must furnish the clues for the variation among farming status in the ratios of early and late respondents.

To determine further differences between early and late respondents, they were classified according to their farming status as shown in Table 10. An inspection of the data in Table 10 shows that a majority of the respondents were either full owners or tenants. There were seven respondents for whom no information on farming status was available.

Chi square was computed and no significant differences were found to exist between the early and late respondents when they were compared on the basis of farming status. The sample frequencies in the foregoing classification were not significantly different from those which would result if only chance factors were operating. Therefore, it was concluded that, based on the evidence in the present investigation,

Table 10

Farming Status of Early and Late Respondents

Farming Status	Type of Response		Total
	Early	Late	
Landlord	299	75	374
Full Owner	1209	265	1474
Part Owner	214	34	248
Manager	45	11	56
Tenant	713	163	876
Hired Hand	11	6	17
Other	43	6	49
No Data	2	5	7
Total	2536	565	3101

there was no relationship between farming status and the tendency to react either as an early or late respondent.

To determine whether or not the tendency to respond early or late was an age characteristic, the early and late respondents were classified on the basis of their age. The age distribution of the 2,526 early respondents and 560 late respondents for whom data on age were available is shown in Table 11.

Using an analysis of variance the early respondents were found to be 0.085 of an age category younger than the late respondents. This difference in age was significant at the one per cent level, indicating that the tendency to respond early or late was an age characteristic. From the evidence shown here, it can be concluded that the early respondents in this investigation tended to be readers whose age level was lower than that of late respondents.

To determine whether or not the tendency to respond early or late was an educational characteristic, the early and late respondents were classified according to their educational level as shown in Table 12. As shown in Table 12 there were 2,479 early respondents and 543 late respondents for whom educational data were available.

Using an analysis of variance the early respondents were found to be 0.348 of a category higher on educational level than the late

Table 11

Age of Early and Late Respondents

Age Level	Type of Response		Total
	Early	Late	
Under 25 Years	64	27	91
25 - 34 Years	568	98	666
35 - 44 Years	639	140	779
45 - 54 Years	607	134	741
55 - 64 Years	428	101	529
Over 64 Years	220	60	280
No Data	10	5	15
Total	2536	565	3101

respondents. This difference was significant at the one per cent level and indicated that the tendency to respond early or late was an educational characteristic. From the evidence shown here it can be concluded that the early respondents in this investigation tended to be readers whose educational level was higher than that of the late respondents.

Table 12

Educational Level of Early and Late Respondents

Educational Level	Type of Response		Total
	Early	Late	
Less than High School	652	193	845
Attended High School	281	74	355
Graduated from High School	844	169	1013
Attended College	445	80	525
Graduated from College	257	27	284
No Data	57	22	79
Total	2536	565	3101

It was also of interest to know if readers in the present sample who were former students at the Iowa State College tended to respond earlier than did others to whom the questionnaire was sent. Based on the results of research in the field of public opinion, it was quite

possible that a "halo" effect associated with attendance at the college could exist in the present study.

The college attendance of early and late respondents is shown in Table 13. As seen in the table, of the 3,022 readers for whom

Table 13

College Attendance of Early and Late Respondents

College Attendance	Type of Response		Total
	Early	Late	
None	1777	436	2213
Iowa State College	402	55	457
Other	300	52	352
No Data	57	22	79
Total	2536	565	3101

complete information on education was available, 457 were former students of the Iowa State College and 352 had attended other colleges.

To determine any differences between the early and late respondents when classified on the basis of college attendance, chi square was computed. A chi-square value of 10.007 was found which was significant at the one per cent level. It was apparent that a factor or

factors was operating which caused differences to exist which were significantly greater than those which would result if only chance factors were operating. It was found that significantly more of the former Iowa State College students were found among the early respondents than would normally be expected. On the other hand, significantly more of the noncollege respondents were late respondents than would normally be expected.

An attempt was made to determine whether or not the tendency of former Iowa State College students to respond early was a result of their association with the college or whether it was a result of their higher educational level. Therefore, the educational level was held constant by comparing the former Iowa State College students with respondents who had attended other colleges. When such a comparison was made and chi square computed, a nonsignificant chi-square value of 1.261 resulted.

It was therefore concluded that when the educational level was held constant, former attendance at the Iowa State College or at other colleges presented no differences in ratio of early to late respondents which might not be expected from sampling fluctuations.

In summary it can be stated that, based upon the evidence shown here, the time of response to the questionnaire has been demonstrated

to be related to the age, education and source of farm income of the readers. The late respondents were found to be significantly older readers than the early respondents and possessing a lower educational level. The group of late respondents was also found to contain proportionately more readers whose major source of farm income was classified as cash grain, specialty or general.

To the extent that it can be assumed that late respondents tend to respond more nearly like nonrespondents than they do early respondents, the evidence shown here may provide assistance in describing those who did not respond. To test the validity of this assumption would require some type of follow-up interview of all or a selected subsample of the nonrespondents. Such a follow-up is beyond the scope of this investigation.

Inasmuch as it was the purpose of this study to evaluate the opinions of the readers of Iowa Farm Science magazine, the differences between the early and late respondents has been minimized because the two groups combined constituted approximately eighty-seven per cent of all farmers to whom questionnaires were sent.

VII. FARMING AREA AND READER PREFERENCE

To test the hypothesis that there is no relationship between reading preferences and farming area it was necessary to classify the readers on the basis of the farming area in which they lived. The 3,101 readers were thus classified according to the questionnaire which they completed in the Empey study and are shown in Table 14.

Table 14

Farming Area Returns and Type of Questionnaire

Farming Area	Questionnaire Number							Total
	1	2	3	4	5	6	7	
Western Livestock	87	95	90	43	120	107	93	635
North-Central Grain	105	86	145	128	86	164	107	821
Northeastern Dairy	77	63	72	129	66	64	52	523
Eastern Livestock	125	125	72	108	71	72	88	661
Southern Pasture	56	79	50	61	62	55	98	461
Total	450	448	429	469	405	462	438	3101

An inspection of the data in Table 14 shows that the North-Central Grain area contained more readers (26.5 per cent) than did any other area, whereas the Southern Pasture area contained the least number of readers (14.9 per cent). The Western Livestock area and the Eastern

Livestock area were found to have approximately the same percentage of readers.

In order to test the present hypothesis, it became necessary to compare the farming areas on the basis of the responses the readers in those areas had recorded in the previous investigation. Only the responses of those readers who returned a particular questionnaire were used in the analysis of a topic appearing on that questionnaire. Because the readers responded to one of seven questionnaires in the previous investigation, selected topics from these questionnaires were used to test the present hypothesis. This procedure was followed throughout the study when other hypotheses were being tested.

In testing the hypothesis the responses of MORE were compared with the combined responses of SAME AMOUNT, LESS and NONE and chi square computed for the data on each topic.

To determine if farming area was related to reading preference, certain topics concerning the major livestock and crop enterprises of the state were selected for analysis.

An attempt was made to determine whether or not farming area was related to the amount of space that should be devoted to material on feeding beef cattle. The responses of the 450 readers who responded to this topic were classified on the basis of farming area and are shown in Table 15.

An inspection of Table 15 reveals that the distribution of respondents from one area to another was rather uneven. The largest group of respondents was in the Eastern Livestock area, whereas the smallest group was in the Southern Pasture area.

Table 15

Amount of Space Requested on Feeding Beef Cattle by Farming Area

Farming Area	Level of Response				
	More	Same Amount	Less	None	Total
Western Livestock	41	30	2	14	87
North-Central Grain	36	47	1	21	105
Northeastern Dairy	28	23	3	23	77
Eastern Livestock	61	41	2	21	125
Southern Pasture	17	18	2	19	56
Total	183	159	10	98	450

To determine differences among the five farming areas concerning the amount of space that should be devoted to material on feeding beef cattle, the responses were compared and chi square computed. A non-significant chi-square value of 9.294 was found which indicated that the readers in the farming areas did not differ concerning the amount of space that should be devoted to feeding beef cattle. Differences

found were not significantly different from those which would result if only chance factors were operating.

An attempt was made to evaluate the possibility that there may be differences among farming areas concerning the amount of space that should be devoted to material on swine production. The topic

Table 16

Amount of Space Requested on Feeding the Sow and Litter by Farming Area

Farming Area	Level of Response				
	More	Same Amount	Less	None	Total
Western Livestock	40	29	1	17	87
North-Central Grain	46	43	2	14	105
Northeastern Dairy	39	26	3	9	77
Eastern Livestock	65	37	1	22	125
Southern Pasture	30	14	0	12	56
Total	220	149	7	74	450

of feeding the sow and litter was selected for analysis. The 450 readers who responded to this topic in the Empey study on Questionnaire No. 1 were classified according to farming area and level of response and are shown in Table 16.

When the responses were compared and chi square computed, a nonsignificant chi-square value was obtained. It was concluded that the readers, when classified according to farming area, did not exhibit significant differences concerning the amount of space that should be devoted to feeding the sow and litter. Probably one would not expect to find great differences from one area to another since the swine enterprise is so universally distributed throughout the state.

To see if the readers in the five farming areas differed markedly concerning the amount of space that should be devoted to material on feeding dairy cows, the responses to the topic were classified on the basis of farming area and are shown in Table 17.

When the responses were compared and chi square computed, a nonsignificant chi-square value was obtained. It was concluded that the amount of space that should be devoted to the dairy cow enterprise did not differ from one area to another.

Responses of readers in the five farming areas were also compared on such items as beef cattle breeding, feeder calves, beef equipment, market hogs, dairy calf feeding, dairy barns and equipment, lamb feeding and sheep breeding. No significant differences were found to exist among the farming areas when the responses to these topics were analyzed.

However, when the responses concerning the amount of space that should be devoted to swine equipment were compared on a farming area basis, a significant chi-square value of 12.422 was found. The readers in the Southern Pasture area wanted significantly more space devoted

Table 17

Amount of Space Requested on Feeding Dairy Cows by Farming Area

Farming Area	Level of Response				
	More	Same Amount	Less	None	Total
Western Livestock	24	28	10	25	87
North-Central Grain	26	41	7	31	105
Northeastern Dairy	25	23	9	20	77
Eastern Livestock	32	41	8	44	125
Southern Pasture	20	17	6	13	56
Total	127	150	40	133	450

to material on swine equipment than did the readers in the other four farming areas. No attempt was made to find the reasons producing this difference.

To determine if there was a relationship between farming area and topics associated with farm crops and soil conservation practices, items appearing on Questionnaire No. 2 were selected for analysis.

The first of these was the topic concerning pastures. The responses to this topic were classified on the basis of farming area of the readers and are shown in Table 18.

As shown in Table 18, a majority of the readers wanted MORE information or the SAME AMOUNT of information on pastures. When the

Table 18

Amount of Space Requested on Pastures by Farming Area

Farming Area	Level of Response				
	More	Same Amount	Less	None	Total
Western Livestock	41	38	5	11	95
North-Central Grain	31	36	5	14	86
Northeastern Dairy	33	23	1	6	63
Eastern Livestock	60	45	8	12	125
Southern Pasture	51	21	3	4	79
Total	216	163	22	47	448

responses were compared and chi square computed, a value of 14.999 was found which was significant at the one per cent level. Thus, it was concluded that farming area was significantly related to the topic on pastures. The readers in the Southern Pasture area wanted significantly more space devoted to pastures than did the readers in the other four farming areas.

The responses to the topic on application of fertilizers were classified on the basis of farming area and are presented in Table 19. When the responses were compared and chi square computed, they yielded a nonsignificant chi-square value. There were no significant differences among the farming areas concerning the amount of space that should be devoted to application of fertilizers.

Table 19

Amount of Space Requested on Application of Fertilizers by Farming Area

Farming Area	Level of Response				
	More	Same Amount	Less	None	Total
Western Livestock	56	23	4	12	95
North-Central Grain	49	25	1	11	86
Northeastern Dairy	32	23	2	6	63
Eastern Livestock	64	44	3	14	125
Southern Pasture	44	24	1	10	79
Total	245	139	11	53	448

The responses to the topic concerning crop rotations are presented in Table 20. An inspection of the data in Table 20 reveals that a majority of the respondents wanted MORE or the SAME AMOUNT of space devoted to this topic. The responses were compared and chi

square computed. A chi-square value of 9.395 was found which approached significance at the five per cent level. The readers in the North-Central Grain area had a tendency to want more space devoted to material on crop rotation. However, this difference was not significant.

Table 20

Amount of Space Requested on Crop Rotations by Farming Area

Farming Area	Level of Response				
	More	Same Amount	Less	None	Total
Western Livestock	34	43	5	13	95
North-Central Grain	47	22	2	15	86
Northeastern Dairy	23	28	3	9	63
Eastern Livestock	54	52	7	12	125
Southern Pasture	28	42	0	9	79
Total	186	187	17	58	448

The responses to the topic concerning soil erosion were classified on the basis of farming area and are shown in Table 21. An inspection of the data in Table 21 indicates that a majority of the readers wanted MORE or the SAME AMOUNT of space devoted to this topic. However, a considerable number of readers in the North-Central Grain area indicated no interest in the topic.

When the responses were compared and chi square computed, a chi-square value of 13.258 was found which approached significance at the one per cent level. Significantly fewer readers in the North-Central Grain area expressed a desire that more space be devoted to

Table 21

Amount of Space Requested on Soil Erosion by Farming Area

Farming Area	Level of Response				
	More	Same Amount	Less	None	Total
Western Livestock	34	38	6	17	95
North-Central Grain	22	33	8	23	86
Northeastern Dairy	29	23	2	9	63
Eastern Livestock	56	48	7	14	125
Southern Pasture	39	31	0	9	79
Total	180	173	23	72	448

material concerning soil erosion, than did readers in other areas. The type of farming area was shown to be significantly related to the topic on soil erosion.

The responses to the topic concerning soil drainage are presented in Table 22. When the responses were compared and chi square computed, a significant chi-square value of 11.572 was found. Thus, farming area

and reader preference concerning the amount of space that should be devoted to soil drainage, were significantly related. Significantly fewer of the readers in the Western Livestock area wanted more space devoted to the topic than did readers in other four farming areas. No attempt was made to find the reason that may have been responsible for differences shown here.

Table 22

Amount of Space Requested on Soil Drainage by Farming Area

Farming Area	Level of Response				
	More	Same Amount	Less	None	Total
Western Livestock	15	42	15	23	95
North-Central Grain	29	38	2	17	86
Northeastern Dairy	16	25	13	9	63
Eastern Livestock	43	52	14	16	125
Southern Pasture	20	32	11	16	79
Total	123	189	55	81	448

No significant differences were found among the five farming areas when the responses to such topics as small grains, fertilizers for small grains, corn, grasses and legumes, weather and other miscellaneous items were analyzed.

The topic concerning egg production was selected for analysis. The responses to the topic were classified on the basis of farming area and are shown in Table 23. As shown in Table 23, a considerable number of readers indicated that no space should be devoted to the topic. However, a majority of the responses were for MORE or the SAME AMOUNT of space.

Table 23

Amount of Space Requested on Egg Production by Farming Area

Farming Area	Level of Response				
	More	Same Amount	Less	None	Total
Western Livestock	17	43	2	28	90
North-Central Grain	36	67	9	33	145
Northeastern Dairy	18	33	5	16	72
Eastern Livestock	18	35	7	12	72
Southern Pasture	14	19	7	10	50
Total	103	197	30	99	429

The responses were compared and chi square computed. A nonsignificant chi-square value was found which indicated that farming area was not related to the amount of space that should be devoted to material concerning egg production.

The responses to other poultry topics such as growing chicks, diseases, and poultry equipment were not found to be significantly related to type of farming area. However, the readers in the Southern Pasture area wanted significantly more space devoted to market poultry than did readers in the other farming areas. No attempt was made to find reasons responsible for this difference.

An attempt was also made to determine relationships between farming areas and the reader preference on the following topics: old machinery, new machinery, electrical wiring, electrical costs, electrical equipment and farm buildings. However, when the responses on these topics were compared and chi square computed, no significant differences were found. Farming area therefore, was not related to the reader preference concerning these topics.

An attempt was made to determine the relationship between farming area and topics classified under the general headings of farm business, schools, family and community living.

The responses to the topic on farm prices were classified on the basis of farming area and are shown in Table 24. An inspection of Table 24 reveals that practically all of the 469 readers who responded to the item, indicated they wanted MORE or the SAME AMOUNT of space

devoted to farm prices. The responses were compared and chi square computed. A nonsignificant chi-square value was found which indicated that there was no relationship between farming area and the topic of farm prices.

Table 24

Amount of Space Requested on Farm Prices by Farming Area

Farming Area	Level of Response				
	More	Same Amount	Less	None	Total
Western Livestock	24	18	0	1	43
North-Central Grain	83	38	2	5	128
Northeastern Dairy	75	48	0	6	129
Eastern Livestock	74	30	0	4	108
Southern Pasture	33	24	2	2	61
Total	289	158	4	18	469

The responses to the topic farm business were classified on the basis of farming area and are shown in Table 25.

When the responses were compared and chi square computed, a nonsignificant chi-square value was obtained. The farming areas did not differ regarding the amount of space that should be devoted to material on farm business.

Table 25

Amount of Space Requested on Farm Business by Farming Area

Farming Area	Level of Response				
	More	Same Amount	Less	None	Total
Western Livestock	22	16	2	3	43
North-Central Grain	70	44	2	12	128
Northeastern Dairy	65	54	2	8	129
Eastern Livestock	66	37	0	5	108
Southern Pasture	37	20	1	3	61
Total	260	171	7	31	469

To determine if the farming area was related to the amount of space the readers wanted devoted to the topic land prices, the responses to the topic were classified on the basis of farming area and are shown in Table 26.

Table 26

Amount of Space Requested on Land Prices by Farming Area

Farming Area	Level of Response				
	More	Same Amount	Less	None	Total
Western Livestock	6	21	9	7	43
North-Central Grain	28	68	14	18	128
Northeastern Dairy	20	72	19	18	129
Eastern Livestock	17	60	17	14	108
Southern Pasture	12	30	12	7	61
Total	83	251	71	64	469

When the responses were compared and chi square computed, a nonsignificant chi-square value was found. Thus, it was concluded that farming area was not related to the reading preferences of readers concerning material on land prices.

The responses to the topic reorganizing school districts were classified according to farming area of the readers and are shown in

Table 27. To determine if there were differences among the farming areas concerning reader responses to the school district topic, the responses were compared and chi square computed. A nonsignificant chi-square value was found which indicated that there was no relationship between farming area and the amount of space that should be devoted to material concerning reorganizing school districts.

Table 27

Amount of Space Requested on Reorganizing School Districts by Farming Area

Farming Area	Level of Response				
	More	Same Amount	Less	None	Total
Western Livestock	10	23	5	5	43
North-Central Grain	24	67	20	17	128
Northeastern Dairy	23	72	17	17	129
Eastern Livestock	14	67	13	14	108
Southern Pasture	6	37	11	7	61
Total	77	266	66	60	469

The responses to the following topics were classified on the basis of farming area and chi square computed for the data: farm legislation, landlord-tenant problems, taxation, marketing, teaching agriculture, school taxes, well-rounded education and state welfare.

No significant relationships existed between farming area and any of the foregoing topics.

The responses to the topic of farm roads are shown in Table 28. An inspection of Table 28 indicates that approximately one-fourth of

Table 28

Amount of Space Requested on Farm Roads by Farming Area

Farming Area	Level of Response				
	More	Same Amount	Less	None	Total
Western Livestock	38	1	2	79	120
North-Central Grain	22	0	0	64	86
Northeastern Dairy	11	1	2	52	66
Eastern Livestock	14	0	0	57	71
Southern Pasture	14	0	1	47	62
Total	99	2	5	299	405

the readers indicated that they wanted MORE information on the topic, whereas three-fourths did not indicate any interest in the topic.

When the responses were compared and chi square computed, a nonsignificant chi-square value was found. There were no differences among the farming areas concerning the amount of space that should be devoted to material on farm roads.

The responses to the topic on control of weeds were classified on the basis of farming area and are shown in Table 29. An inspection of the data in Table 29 shows that the majority of responses were for MORE space or the SAME AMOUNT of space on the topic.

Table 29

Amount of Space Requested on Control of Weeds by Farming Area

Farming Area	Level of Response				
	More	Same Amount	Less	None	Total
Western Livestock	65	36	1	5	107
North-Central Grain	112	42	0	10	164
Northeastern Dairy	36	16	1	11	64
Eastern Livestock	55	13	0	4	72
Southern Pasture	40	12	1	2	55
Total	308	119	3	32	462

To determine differences among the farming areas concerning the responses to the item, the responses were compared and chi square computed. A chi-square value of 8.982 was found which approached significance at the five per cent level. However, it was concluded that farming area was not significantly related to the topic of control of weeds.

The responses to the topic control of corn borers are shown in Table 30. To determine if readers in the farming areas exhibited differences concerning the amount of space that should be devoted to the topic, the responses were compared and chi-square computed. A

Table 30

Amount of Space Requested on Control of Corn Borers by Farming Area

Farming Area	Level of Response				Total
	More	Same Amount	Less	None	
Western Livestock	80	20	1	6	107
North-Central Grain	125	29	3	7	164
Northeastern Dairy	41	12	2	9	64
Eastern Livestock	54	16	0	2	72
Southern Pasture	33	18	2	2	55
Total	333	95	8	26	462

chi-square value of 8.041 was found which was nonsignificant, indicating there were no differences among farming areas concerning the amount of space that should be devoted to material on control of corn borers.

There were found to be no significant relationships between farming area and the amount of space that readers indicated should be devoted to

such topics as rodents and other wild animals, insects other than corn borers, flowers, fish and cleaning seeds. Apparently these topics were received with about the same amount of enthusiasm by readers in all of the farming areas.

In conclusion, it can be stated that insofar as the present analysis is concerned, farming area has been found to be significantly related to reading preferences concerning topics in many agricultural enterprises. To the extent that these relationships exist, the postulated hypothesis that there is no relationship between reading preferences and farming area has to be refuted. The farming area of the readers was found to be significantly related to reading preferences recorded on the following topics: swine equipment, pastures, soil erosion, soil drainage and market poultry.

However, it should be pointed out that considerably more of the topics here analyzed were found to be not related to type of farming area. To this extent, the postulated hypothesis has not been disproven and cannot be rejected entirely. The reading preferences concerning the following topics were not found to be related to the farming area of the readers: beef cattle feeding and management, feeding and managing dairy cows and calves, feeding and managing sheep and lambs, crop rotations, farm management and business, farm legislation, taxation,

control of weeds and corn borers, school taxes, reorganizing school districts, state welfare programs and community organization.

VIII. SOURCE OF FARM INCOME AND READER PREFERENCE

Another purpose of the present study was to test the hypothesis that there is no relationship between the reading preferences of Iowa Farm Science readers and their source of farm income. In testing this hypothesis a number of topics on which readers had recorded a reading preference were selected from Questionnaires No. 1, 2, 3 and 4.

Of the 3,101 readers who returned a questionnaire, seventeen failed to report information concerning their source of farm income. Therefore the analysis of responses presented in the following discussion does not include the responses of those for whom data on farm income were not available.

In testing the hypothesis the responses of MORE were compared with the combined responses of SAME AMOUNT, LESS and NONE and chi square computed for the data on each topic.

The responses to the topic feeding beef cattle were classified according to the major source of farm income of the readers and are shown in Table 31. To determine whether or not there were significant differences among the major farm income groups regarding the amount of space the readers in those groups wanted devoted to this topic, the responses were compared and chi square computed.

A highly significant chi-square value of 62.646 was found. Thus, it was concluded that differences did exist among the farm income groups. It was found that those readers whose major source of farm income was classified as beef-hog wanted significantly more information

Table 31

Amount of Space Requested on Feeding Beef Cattle by Source of Farm Income

Major Source of Farm Income	Level of Response				
	More	Same Amount	Less	None	Total
Beef-Hog	101	56	2	21	180
Dairy-Hog	9	36	6	43	94
Cash Grain	9	9	0	0	18
Specialty	5	12	2	8	27
General	58	46	0	25	129
No Data	1	0	0	1	2
Total	183	159	10	98	450

on this phase of the beef enterprise. On the other hand, readers whose farm income was considered to be dairy-hog wanted significantly less of this information than did the readers in the other groups.

When the responses to other beef cattle topics such as feeder calves, housing and equipment, and beef breeding were similarly

classified and chi square computed for the data, highly significant differences were found to exist among the five major farm income groups. Not only did the beef-hog group want significantly more information on these topics, but the dairy-hog readers wanted significantly less. Chi-square values for beef breeding, feeder calves and housing and equipment were 19.074, 16.198 and 15.222 respectively. These chi-square values, although highly significant, were noticeably smaller than the value yielded from the data concerning the topic of feeding beef cattle.

To test the assumption that it makes no difference what a farmer's major source of farm income is as far as his reading interests in farm topics are concerned, topics on swine production were selected for analysis. The topic concerning hog breeding was selected and the distribution of the responses to this topic by major source of farm income is presented in Table 32.

When the responses were compared and chi square computed for the data, a highly significant chi-square value of 18.618 was found. The readers whose income was classified as cash grain wanted significantly less space devoted to this topic. Further inspection of Table 32 reveals that only one in eighteen readers wanted more information on hog breeding than had previously been published in the Iowa Farm Science.

Using the same chi-square analysis the reader responses to swine topics such as feeding the sow and litter, market hogs and hog equipment were analyzed. The data concerning the topic feeding the sow and litter yielded a highly significant chi-square value of 18.437.

Table 32

Amount of Space Requested on Hog Breeding by Source of Farm Income

Major Source of Farm Income	Level of Response				
	More	Same Amount	Less	None	Total
Beef-Hog	83	58	2	37	180
Dairy-Hog	48	28	1	17	94
Cash Grain	1	11	1	5	18
Specialty	6	11	3	7	27
General	58	53	0	18	129
No Data	0	0	0	2	2
Total	196	161	7	86	450

It was found that the farm income group classified as general wanted significantly more information on feeding the sow and litter than did the other groups.

There were no significant differences among the farm income groups concerning the amount of space that the readers wanted devoted to the

swine topics of market hogs and hog equipment. The data for these topics yielded nonsignificant chi-square values of 7.149 and 0.741 respectively.

In the area of dairying, the topic of feeding dairy cows was selected for analysis. The responses to the topic were classified

Table 33

Amount of Space Requested on
Feeding Dairy Cows by Source of Farm Income

Major Source of Farm Income	Level of Response				
	More	Same Amount	Less	None	Total
Beef-Hog	27	55	23	75	180
Dairy-Hog	60	24	2	8	94
Cash Grain	3	7	4	4	18
Specialty	4	8	2	13	27
General	32	56	9	32	129
No Data	1	0	0	1	2
Total	127	150	40	133	450

on the basis of the major source of farm income of the readers and the resulting distribution is shown in Table 33. When the responses to this topic were compared and chi square computed for the data, a highly significant chi-square value of 78.151 was found.

The readers whose farm income was classified as dairy-hog wanted significantly more information on feeding dairy cows than did the other groups. On the other hand, the beef-hog group of readers wanted significantly less information on this topic.

Using the same chi-square analysis the reader responses to the topics of dairy calf feeding and dairy barns were analyzed. The data on these topics yielded highly significant chi-square values of 107.656 and 46.281 respectively. Thus, the major source of farm income was shown to be significantly related to the reader preferences concerning the three topics of dairying.

The distribution of the responses to the topic of sheep breeding are presented in Table 34. An inspection of the data in Table 34 shows that only one in five readers wanted MORE information devoted to the topic than had previously been published in Iowa Farm Science.

To determine if there were significant differences among the farm income groups concerning the emphasis that should be given to material on sheep breeding, the responses were compared and chi square computed. A significant chi-square value of 10.318 was found, indicating that the source of farm income was related to the reading preferences on this topic. A similar chi-square analysis was applied to the data on the topic of lamb feeding and they yielded a highly significant chi-square value of 17.802.

Table 34

Amount of Space Requested on Sheep Breeding by Source of Farm Income

Major Source of Farm Income	Level of Response			None	Total
	More	Same Amount	Less		
Beef-Hog	21	48	25	86	180
Dairy-Hog	14	28	8	44	94
Cash Grain	5	6	3	4	18
Specialty	8	4	3	12	27
General	28	42	16	43	129
No Data	1	0	0	1	2
Total	77	128	55	190	450

Topics in the area of crops, soil management and conservation practices were selected to test the present hypothesis. When testing previous hypotheses in this investigation reading preferences concerning the topics of soil erosion, crop rotations and soil drainage were found, in most cases, to be significantly related to characteristics

Table 35

Amount of Space Requested on Crop Rotations by Source of Farm Income

Major Source of Farm Income	Level of Response				
	More	Same Amount	Less	None	Total
Beef-Hog	67	73	11	17	168
Dairy-Hog	36	37	1	15	89
Cash Grain	17	1	0	4	22
Specialty	8	11	2	7	28
General	58	64	3	14	139
No Data	0	1	0	1	2
Total	186	187	17	58	448

of the reader or his farming program. Therefore these topics were selected for the purpose of testing the present hypotheses.

The responses to the topic of crop rotations were classified on the basis of the readers' major source of farm income and are presented in

Table 35. When the responses were compared and chi square computed for the data, a highly significant chi-square value of 13.666 was found, indicating that there were differences among the farm income groups. The readers whose major source of income was classified as cash-grain wanted significantly more information on crop rotations than did other readers.

Table 36

Amount of Space Requested on Soil Erosion by Source of Farm Income

Major Source of Farm Income	Level of Response				
	More	Same Amount	Less	None	Total
Beef-Hog	69	70	7	22	168
Dairy-Hog	40	34	5	10	89
Cash Grain	12	6	0	4	22
Specialty	7	4	4	13	28
General	51	59	7	22	139
No Data	1	0	0	1	2
Total	180	173	23	72	448

The distribution of the responses to the topic of soil erosion is presented in Table 36. An inspection of the data indicates that about the same proportion of readers indicated a desire for MORE information on this topic as did the readers on the previous topic.

When chi square was computed for the data in Table 36 a value of 6.183 was found which was nonsignificant. There were no differences among the major farm income groups when compared on the basis of responses to the topic of soil erosion.

Table 37

Amount of Space Requested on Soil Drainage by Source of Farm Income

Major Source of Farm Income	Level of Response				
	More	Same Amount	Less	None	Total
Beef-Hog	49	72	23	24	168
Dairy-Hog	23	41	11	14	89
Cash Grain	13	5	0	4	22
Specialty	6	5	5	12	28
General	31	66	16	26	139
No Data	1	0	0	1	2
Total	123	189	55	81	448

The distribution of responses to the topic of soil drainage is presented in Table 37. To determine whether or not the major source of farm income of the readers who responded to this topic was related to their reading preferences the responses were compared and chi square computed for the data. A highly significant chi-square value of 13.887

was found, indicating that differences did exist among the major income groups. The cash grain farmers wanted significantly more information on soil drainage than did the other groups.

Using a similar chi-square analysis, the farm income groups were also compared on the basis of responses to the following topics: small grains, corn, grasses and legumes, pastures, fertilizers and weather. However, no significant relationships were found to exist between the source of farm income and reading preferences on these topics.

The following topics were also used in testing the present hypothesis: egg production, market poultry, rearing chicks, poultry diseases, poultry houses and equipment, new and old machinery, farm buildings, electrical wiring, electrical costs and electrical equipment. When the responses of MORE to these topics were compared with the combined responses of SAME AMOUNT, LESS and NONE and chi-square computed, the only topic which was found to be significantly related to major source of farm income was the topic of new machinery. The data for this topic yielded a significant chi-square value of 9.702.

Topics in the area of farm management, farm legislation, schools and community organizations, were also selected for use in testing the present hypothesis.

The responses to the topic of land prices were classified on the basis of the major farm income of the readers and are presented in

Table 38. An inspection of the data in Table 38 shows that approximately one in five readers indicated an interest in MORE information on the topic of land prices. There were no significant differences among the major income groups however, when the reading preferences to the topic of land prices were analyzed.

Table 38

Amount of Space Requested on Land Prices by Source of Farm Income

Major Source of Farm Income	Level of Response				
	More	Same Amount	Less	None	Total
Beef-Hog	35	86	30	25	176
Dairy-Hog	15	70	17	14	116
Cash Grain	6	11	3	3	23
Specialty	4	10	3	0	17
General	22	73	18	21	134
No Data	1	1	0	1	3
Total	83	251	71	64	469

When the responses of MORE were compared with the combined responses of SAME AMOUNT, LESS and NONE on each of the following topics, and chi square computed for the data, no significant differences were found: farm business, legislation, farm prices, landlord-tenant problems,

taxation, marketing, reorganizing school districts, teaching agriculture, school taxes, well-rounded education, Community organizations and state welfare.

When the topics listed on Questionnaire No. 6 were used in testing the present hypothesis, the only topic found to be significantly related

Table 39

Amount of Space Requested on Growing Vegetables by Source of Farm Income

Major Source of Farm Income	Level of Response				
	More	Same Amount	Less	None	Total
Beef-Hog	32	98	23	33	186
Dairy-Hog	28	39	7	13	87
Cash Grain	7	11	3	8	29
Specialty	11	17	3	1	32
General	35	59	14	19	127
No Data	1	0	0	0	1
Total	114	224	50	74	462

to source of farm income was that concerning vegetables. The distribution of the responses to this topic, when classified on the basis of source of farm income, is presented in Table 39. An inspection of the data in Table 39 indicates that approximately one in four readers

asked for MORE information on the topic. The other readers showed a varied interest in the topic. When the responses were compared and chi square computed for the data, a significant chi-square value of 10.549 was found. For some unknown reason the readers whose major source of farm income was classified as beef-hog wanted less information on vegetables than did the other groups.

Table 40

Amount of Space Requested on Corn Borers by Source of Farm Income

Major Source of Farm Income	Level of Response				
	More	Same Amount	Less	None	Total
Beef-Hog	140	37	3	6	186
Dairy-Hog	62	16	3	6	87
Cash Grain	20	7	0	2	29
Specialty	20	9	1	2	32
General	90	26	1	10	127
No Data	1	0	0	0	1
Total	333	95	8	26	462

The distribution of the responses to the topic of corn borers is presented in Table 40. An inspection of the data in Table 40 indicates that the readers were vitally interested in the topic of corn borers, inasmuch as nearly three-fourths indicated a desire for MORE information concerning the topic.

To determine differences among the major farm income groups concerning the amount of space that the readers felt the magazine should devote to the topic, the responses were compared and chi square computed for the data. A nonsignificant chi-square value was found which indicated that reading preference, in terms of the responses given to the topic of corn borers, was not related to the source of farm income.

There was found to be no relationship between source of farm income and the reading preferences concerning the topics of flowers, seed cleaning, fruits, weeds, other insects, rodents, other wild animals, trapping and fish.

In summary it can be stated that, based on the evidence found in the foregoing analysis, the present hypothesis that there is no relationship between the reading preferences of Iowa Farm Science readers and their source of farm income has to be rejected. Particularly is this true where reading preferences concerning topics in the area of the major livestock enterprises are concerned. If a reader's major source of farm income was acquired from beef cattle for example, he invariably indicated a desire for more information concerning the topics associated with the beef enterprise. The same was true in the case of both the swine and dairy enterprises. On the other hand, reading preferences associated with the major crop enterprises were not, in most cases, found to be related to the source of farm income.

In testing the present hypothesis, a few significant relationships were found to exist between the present classification of readers and reader preferences concerning farm management topics. Apparently such topics as farm business, land and farm prices, farm legislation, taxation, etc. were of equal importance to all groups of farm readers regardless of their major source of farm income. It is understandable that topics such as school districts, well-rounded education, state welfare and school taxes would be considered to be of as much interest to one group of readers in the present classification as they would to others.

The cash grain farmers were conspicuous in their requests for more information on topics associated with soil management. They wanted significantly more information concerning the topics of crop rotations and soil drainage than did the other readers.

Reading preferences concerning such enterprises as poultry, fruits, grasses and legumes, etc. which tend to supplement the average Iowa farmer's income, were not found to be significantly related to any of the major income groups. Perhaps topics such as these tend to stand in equal stead with most farm readers, irrespective of the reader's major source of farm income.

IX. FARMING STATUS AND READER PREFERENCE

One of the purposes of the present study was to test the hypothesis that there is no relationship between the reading preferences of Iowa Farm Science readers and their farming status. Therefore, certain topics appearing on the seven questionnaires in the Empey study were selected for analysis. It was necessary to classify the reader responses to these topics on the basis of the readers' farming status.

In testing the hypothesis, the responses of MORE were compared with the combined responses of SAME AMOUNT, LESS and NONE and chi square computed for the data on each topic.

Inasmuch as few readers had indicated their farming status to be that of manager, hired hand or other status, the responses of these readers were not used in the present statistical analysis. It became necessary, therefore, to limit the analysis to the four major groups of readers classified as landlord, full owner, part owner and tenant.

The first topic selected for analysis was that of hog breeding. The distribution of the responses to this topic were classified on the basis of the farming status of the readers and are presented in Table 41. It can be seen in Table 41 that a majority of the readers, regardless of farming status, wanted MORE or the SAME AMOUNT of space devoted to hog breeding.

Table 41

Amount of Space Requested on Hog Breeding by Farming Status

Farming Status	Level of Response				Total
	More	Same Amount	Less	None	
Landlord	14	17	1	15	47
Full Owner	87	86	2	50	225
Part Owner	15	10	0	3	28
Manager	3	3	0	0	6
Tenant	72	42	4	16	134
Hired Hand	0	1	0	0	1
Other	5	2	0	2	9
Total	196	161	7	86	450

When the responses were compared and chi square computed, a highly significant chi-square value (12.726) was found. The landlord group wanted significantly less space devoted to hog breeding than did the other three groups. On the other hand, the tenants wanted significantly more space devoted to this topic. The response of the landlords would reflect perhaps, that more of them were farming on a cash grain basis and were therefore not as interested in this livestock topic as were the other groups. The swine enterprise as a whole is undoubtedly one of the mainstays of a tenant farming program and a tenant, therefore, would be inclined to show interest in this topic.

The responses to the topic, market hogs, were classified according to the farming status of the readers and the resulting classification is shown in Table 42. The readers indicated once more a high degree of interest in the swine enterprise. An inspection of Table 42 reveals that a majority wanted MORE or the SAME AMOUNT of space devoted to market hogs.

When the responses were compared and chi square computed, the data yielded a significant chi-square value of 8.233. The readers who were farming on a tenant basis wanted significantly more space devoted to market hogs than did the other farming status groups.

There were no significant differences among the four farming status groups when their reading preferences concerning the topics, swine

Table 42

Amount of Space Requested on Market Hogs by Farming Status

Farming Status	Level of Response				
	More	Same Amount	Less	None	Total
Landlord	18	17	0	12	47
Full Owner	92	83	4	46	225
Part Owner	10	10	2	6	28
Manager	0	4	0	2	6
Tenant	73	52	2	7	134
Hired Hand	0	1	0	0	1
Other	4	3	0	2	9
Total	197	170	8	75	450

equipment and feeding the sow and litter, were analyzed. The four farming status groups were also compared on the basis of reader responses to such topics as feeding beef cattle, feeder calves, beef equipment and beef breeding, and no significant differences were found when chi square was computed for the data.

To determine if farming status was related to the amount of space that should be devoted to the dairy enterprise, the topic on feeding dairy cows was selected for analysis. The distribution of the reader responses to this topic is shown in Table 43.

When chi square was computed for the data they yielded a value of 8.346 which was significant at the five per cent level. The landlords wanted significantly less space devoted to material on feeding dairy cows than did the other farming status groups.

When the responses of MORE were compared with the combined responses of SAME AMOUNT, LESS and NONE, on other dairy topics and chi square computed for the data, no significant differences were found. Furthermore, no significant relationships were found to exist between farming status and the topics, sheep breeding and lamb feeding. The sample frequencies which resulted when the responses to these topics were classified by farming status, were not found to be significantly different than those which would result if only chance factors were operating.

Table 43

Amount of Space Requested on Feeding Dairy Cows by Farming Status

Farming Status	Level of Response				
	More	Same Amount	Less	None	Total
Landlord	6	20	2	19	47
Full Owner	71	62	17	75	225
Part Owner	5	11	3	9	28
Manager	3	2	0	1	6
Tenant	39	53	17	25	134
Hired Hand	0	0	0	1	1
Other	3	2	1	3	9
Total	127	150	40	133	450

The responses to the topic of pastures were classified on the basis of farming status of the readers and the distribution of the responses is shown in Table 44. An inspection of the data in Table 44 indicates quite clearly that most of the readers, irrespective of farming status, wanted MORE or the SAME AMOUNT of space devoted to pastures as had been devoted to this topic in past issues of Iowa Farm Science.

When the responses were compared and chi square computed, a nonsignificant chi-square value was found. Thus, farming status was not significantly related to the reading preferences concerning pastures.

The distribution of the responses to the topic, crop rotations, were classified on the basis of farming status and the resulting distribution is shown in Table 45. It can be seen in Table 45 that a majority of the readers indicated a preference for MORE space or the SAME AMOUNT of space devoted to the topic. When the responses were compared and chi square computed for the data, no significant differences were found.

When the responses of readers concerning the topic, soil erosion, were classified on the basis of the farming status of the readers, it was found that a majority wanted more space or the same

Table 44

Amount of Space Requested on Pastures by Farming Status

Farming Status	Level of Response				
	More	Same Amount	Less	None	Total
Landlord	26	11	1	9	47
Full Owner	110	72	7	22	211
Part Owner	20	12	3	6	41
Manager	3	0	1	1	5
Tenant	54	63	10	8	135
Hired Hand	1	2	0	0	3
Other	2	3	0	1	6
Total	216	163	22	47	448

Table 45

Amount of Space Requested on Crop Rotations by Farming Status

Farming Status	Level of Response				
	More	Same Amount	Less	None	Total
Landlord	17	17	3	10	47
Full Owner	95	78	4	34	211
Part Owner	18	16	4	3	41
Manager	2	1	0	2	5
Tenant	52	69	5	9	135
Hired Hand	1	2	0	0	3
Other	1	4	1	0	6
Total	186	187	17	58	448

amount of space devoted to the topic. The distribution of the responses is presented in Table 46. When chi square was computed for the data, i.e., comparing the responses of MORE with all other responses, a nonsignificant chi-square value (6.533) was found. Farming status was not found to be significantly related to the reader preferences concerning the topic, soil erosion.

Further analyses of other topics such as small grains, fertilizers, grasses and legumes, soil drainage and weather did not reveal any significant relationships between these topics and the farming status of the readers.

Topics which dealt with the poultry enterprise, farm buildings, machinery and electricity were selected for analysis.

The distribution of the responses to the topic, egg production, is presented in Table 47. When the responses were compared and chi square computed for the data, a chi-square value of 7.695 was found. This value approached significance at the five per cent level. The tenants had a tendency to want more space devoted to egg production than did any of the other groups.

Using a similar analysis, an attempt was made to find relationships between farming status and other poultry topics such as poultry diseases, raising chicks, poultry equipment and market poultry. However, no significant relationships were found to exist.

Table 46

Amount of Space Requested on Soil Erosion by Farming Status

Farming Status	Level of Response				
	More	Same Amount	Less	None	Total
Landlord	18	20	0	9	47
Full Owner	96	64	7	44	211
Part Owner	16	16	2	7	41
Manager	4	0	0	1	5
Tenant	43	70	11	11	135
Hired Hand	1	1	1	0	3
Other	2	2	2	0	6
Total	180	173	23	72	448

Table 47

Amount of Space Requested on Egg Production by Farming Status

Farming Status	Level of Response				
	More	Same Amount	Less	None	Total
Landlord	8	26	4	18	56
Full Owner	41	89	17	44	191
Part Owner	11	15	2	7	35
Manager	0	2	1	2	5
Tenant	42	63	6	27	138
Hired Hand	0	0	0	0	0
Other	1	2	0	1	4
Total	103	197	30	99	429

When the responses on the topic, care of old machinery, were compared and chi square computed for the data, a nonsignificant chi-square value (6.543) was found. The distribution of the responses is presented in Table 48. It was therefore concluded that farming status was not significantly related to the reading preferences concerning this topic.

The distribution of the responses to the topic, farm buildings, is presented in Table 49. An inspection of the data in Table 49 indicates that a majority of the readers wanted MORE space devoted to the topic. When the responses were compared and chi square computed for the data, they yielded a significant chi-square value of 9.921. Thus, farming status was shown to be significantly related to the reader preferences concerning the topic of farm buildings.

The responses to the topic, electrical equipment, were classified according to the farming status of the readers and the resulting distribution is presented in Table 50. An inspection of the data in Table 50 indicates that approximately three out of four readers wanted MORE or at least the SAME AMOUNT of space devoted to material on electrical equipment. When the responses were compared and chi square computed for the data, a significant chi-square value of 9.929 was found. Thus, farming status was found to be significantly related to the reader preferences concerning the topic of electrical equipment.

Table 48

Amount of Space Requested on Care of Old Machinery by Farming Status

Farming Status	Level of Response				Total
	More	Same Amount	Less	None	
Landlord	15	21	6	14	56
Full Owner	84	72	8	27	191
Part Owner	11	14	4	6	35
Manager	2	2	0	1	5
Tenant	57	51	7	23	138
Hired Hand	0	0	0	0	0
Other	1	1	1	1	4
Total	170	161	26	72	429

Table 49

Amount of Space Requested on Farm Buildings by Farming Status

Farming Status	Level of Response				
	More	Same Amount	Less	None	Total
Landlord	35	11	0	10	56
Full Owner	109	51	3	28	191
Part Owner	19	11	0	5	35
Manager	5	0	0	0	5
Tenant	58	47	4	29	138
Hired Hand	0	0	0	0	0
Other	1	2	0	1	4
Total	227	122	7	73	429

Table 50

Amount of Space Requested on Electrical Equipment by Farming Status

Farming Status	Level of Response				
	More	Same Amount	Less	None	Total
Landlord	16	23	0	17	56
Full Owner	94	50	5	42	191
Part Owner	18	12	0	5	35
Manager	1	2	0	2	5
Tenant	53	51	3	31	138
Hired Hand	0	0	0	0	0
Other	3	0	0	1	4
Total	185	138	8	98	429

The responses to the topics, electrical wiring, electrical costs, and new machinery were classified on the basis of the farming status of the readers and chi square was computed for the data. However, no significant differences concerning these topics were found to exist among the four farming status groups. Farming status was not related to the reading preferences of Iowa Farm Science readers as far as these topics were concerned.

Topics in the area of farm business, schools, and community organizations, were also selected for analysis. The first of these topics was the topic of farm business. The distribution of the responses concerning farm business is shown in Table 51. It was noted that, of the 468 readers who responded to this topic, less than one in seven indicated that less space or no space was desired. The responses were compared and chi square computed for the data. A highly significant chi-square value of 17.412 was found which indicated that there were differences among the farming status groups concerning the amount of space that should be devoted to farm business.

It was of interest to know how the readers in the farming status groups responded to the topic of farm legislation. Therefore, the responses were classified on the basis of farming status and are shown in Table 52. When the responses were compared and chi square computed for the data, they yielded a highly significant chi-square value of

Table 51

Amount of Space Requested on Farm Business by Farming Status

Farming Status	Level of Response				
	More	Same Amount	Less	None	Total
Landlord	24	24	0	8	56
Full Owner	112	96	5	19	232
Part Owner	28	9	0	0	37
Manager	9	1	0	0	10
Tenant	77	38	2	4	121
Hired Hand	5	1	0	0	6
Other	4	2	0	0	6
Total	259	171	7	31	468

Table 52

Amount of Space Requested on Farm Legislation by Farming Status

Farming Status	Level of Response				
	More	Same Amount	Less	None	Total
Landlord	27	21	0	8	56
Full Owner	82	107	14	29	232
Part Owner	7	23	4	3	37
Manager	1	7	0	2	10
Tenant	31	70	11	9	121
Hired Hand	1	5	0	0	6
Other	1	2	2	1	6
Total	150	235	31	52	468

12.753. Farming status therefore, was significantly related to the reading preferences recorded on the topic of farm legislation. From an inspection of the data, it appeared that landlords were more interested in this type of information than were the other groups of readers. No attempt was made to find a reason for such differences.

The responses to the topic, land prices, were classified on the basis of the farming status of the readers and are presented in Table 53. An inspection of the data in Table 53 shows that more than one-half of the readers indicated a desire for about the SAME AMOUNT of information on land prices. When the responses were compared and chi square computed for the data, a significant chi-square value of 9.177 was found. The tenants wanted significantly more space devoted to the topic than did the other readers. This response indicated that the tenants in the present study were a group of readers to whom land prices were of great concern.

It was of interest to know how the readers in the farming status groups responded to the topic of landlord-tenant problems. The responses were summarized and are presented in Table 54. When the responses were compared and chi square computed for the data, a highly significant chi-square value of 45.495 was found. The tenants wanted significantly more information on landlord-tenant problems than did the other groups. On the other hand, the full owners did not want as

Table 53

Amount of Space Requested on Land Prices by Farming Status

Farming Status	Level of Response				
	More	Same Amount	Less	None	Total
Landlord	10	31	6	9	56
Full Owner	36	122	41	33	232
Part Owner	3	22	8	4	37
Manager	0	7	1	2	10
Tenant	32	62	13	14	121
Hired Hand	0	5	0	1	6
Other	1	2	2	1	6
Total	82	251	71	64	468

Table 54

Amount of Space Requested on
Landlord-Tenant Problems by Farming Status

Farming Status	Level of Response				Total
	More	Same Amount	Less	None	
Landlord	24	21	4	7	56
Full Owner	41	114	32	45	232
Part Owner	9	19	6	3	37
Manager	4	4	1	1	10
Tenant	61	39	12	9	121
Hired Hand	2	3	1	0	6
Other	1	3	2	0	6
Total	142	203	58	65	468

much information on landlord-tenant problems. The landlords did not indicate a very high degree of interest in the topic.

The responses to the topic of reorganizing school districts are shown in Table 55. When the responses were compared and chi square computed for the data, a chi-square value of 6.844 was found. This value was nonsignificant and indicated that there was no significant relationship between farming status and reader preference concerning information on reorganizing school districts.

The responses to the topic of school taxes were classified by farming status of the reader and are presented in Table 56. When chi square was computed for the data in Table 56 they yielded a highly significant chi-square value of 28.221. Thus it was concluded that farming status and reader preference concerning school taxes were significantly related. The landlords who responded to this topic wanted significantly more information on school taxes, whereas the tenants wanted significantly less information on the topic.

The responses to the topic of community organizations were classified on the basis of the farming status of the readers, and are presented in Table 57. When chi square was computed for the data in Table 57 they yielded a nonsignificant chi-square value. There was no significant relationship between farming status and reader preference concerning information about community organizations.

Table 55

Amount of Space Requested on
Reorganizing School Districts by Farming Status

Farming Status	Level of Response				
	More	Same Amount	Less	None	Total
Landlord	25	16	6	9	56
Full Owner	82	84	27	39	232
Part Owner	19	11	4	3	37
Manager	3	3	1	3	10
Tenant	34	58	15	14	121
Hired Hand	2	4	0	0	6
Other	1	2	1	2	6
Total	166	178	54	70	468

Table 56

Amount of Space Requested on School Taxes by Farming Status

Farming Status	Level of Response				
	More	Same Amount	Less	None	Total
Landlord	33	15	2	6	56
Full Owner	84	95	15	38	232
Part Owner	14	15	3	5	37
Manager	4	2	1	3	10
Tenant	23	66	13	19	121
Hired Hand	0	6	0	0	6
Other	2	2	0	2	6
Total	160	201	34	73	468

Table 57

Amount of Space Requested on
Community Organizations by Farming Status

Farming Status	Level of Response				
	More	Same Amount	Less	None	Total
Landlord	12	23	6	15	56
Full Owner	59	104	16	53	232
Part Owner	10	15	6	6	37
Manager	1	5	2	2	10
Tenant	30	64	9	18	121
Hired Hand	2	4	0	0	6
Other	1	3	0	2	6
Total	115	218	39	96	468

Topics such as state welfare, teaching agriculture, a well-rounded education and marketing, were not found to be significantly related to farming status.

There was no significant relationship between farming status of the readers and the following topics: fruits, vegetables, flowers, weeds, cleaning seed, corn borers, crop insects, rodents, other wild animals, trapping and fish. Comparing the responses of MORE with the combined responses of SAME AMOUNT, LESS and NONE and computing chi square for the data, yielded nonsignificant chi-square values for each of the foregoing topics.

In summary it can be stated that, based on the evidence found in the foregoing analyses, the present hypothesis that there is no relationship between the reading preferences of Iowa Farm Science readers and their farming status, has to be rejected. It has been demonstrated that on many topics, highly significant relationships do exist between the reading preferences of a reader and his farming status. These relationships have been particularly noticeable concerning topics in the areas of managing the farm business, taxation and other topics that affect the day-by-day individual decisions of farmers.

It should also be pointed out that the reading preferences of the tenants in many of the foregoing analyses, were responsible for

many of the significant differences that were demonstrated. As a group, the tenants consistently asked for more information concerning topics that were associated with getting established in farming.

X. RELATIONSHIP OF AGE AND EDUCATION TO READER PREFERENCE

It is well known that the educational level of adult groups is related to their age level, the younger adults having had more formal schooling than their elders. Reading preferences have been analyzed for purposes of this study, both from the standpoint of age without controlling educational level and educational level without controlling age.

An attempt has been made to control by taking some of the larger age and educational categories and making tests of significance in these subgroups. This procedure avoids the confounding effect of disproportionality of the number of people of various ages in the classification of educational level.

Certain topics dealing with farm management and the sociological development of the farm reader and his family were selected for analysis. The editors of Iowa Farm Science were concerned about the relationship of these topics to the age and educational level of the readers.

The responses to the topic of farm business were classified on the basis of the educational level of the readers and are shown in Table 58. As seen in Table 58, a majority of the readers indicated

an interest in MORE or the SAME AMOUNT of information concerning farm business. When the responses were compared and analysis of variance computed, those who wanted more space devoted to the topic had a significantly higher educational level than the other respondents.

Table 58

Amount of Space Requested on Farm Business by Educational Level

Educational Level	Level of Response: More	Same Amount	Less	None	Total
Less than High School	71	61	1	14	147
Attended High School	28	21	1	2	52
Graduated from High School	93	45	1	8	147
Attended College	44	24	2	5	75
Graduated from College	21	14	2	1	38
No Data	3	6	0	1	10
Total	260	171	7	31	469

The responses to the topic of farm business were also classified on the basis of the age of the reader and are shown in Table 59. When the responses were compared and analysis of variance computed, the readers who wanted more space devoted to the topic were found to be significantly younger than the other respondents. This difference in age was approximately six years.

The age of the readers was controlled by taking a large age category and comparing the reader responses concerning farm business on the basis of the educational level of the readers. When analysis of variance was computed, no significant differences in education were found. When a similar analysis was made by controlling the

Table 59

Amount of Space Requested on Farm Business by Age of Readers

Age Level	Level of Response				
	More	Same Amount	Less	None	Total
Under 25 Years	18	4	0	0	22
25 - 34 Years	56	33	0	3	92
35 - 44 Years	81	36	3	6	126
45 - 54 Years	58	36	2	10	106
55 - 64 Years	29	37	2	10	78
Over 64 Years	16	25	0	2	43
Total	258	171	7	31	467

educational level of the readers, no significant age differences were found. The use of such a control on the age and educational level of the readers demonstrated that significant differences in the reading preferences concerning farm business tended to disappear whenever the age or educational levels were held constant.

The responses to the topic of marketing were classified on the basis of the educational level of the readers and are shown in Table 60. When the responses were compared and analysis of variance computed, the readers who wanted more space devoted to marketing were found to have a significantly higher educational level than the other respondents.

Table 60

Amount of Space Requested on Marketing by Educational Level

Educational Level	Level of Response				
	More	Same Amount	Less	None	Total
Less than High School	73	56	1	17	147
Attended High School	36	14	1	1	52
Graduated from High School	84	41	7	15	147
Attended College	43	25	1	6	75
Graduated from College	23	12	1	2	38
No Data	7	3	0	0	10
Total	266	151	11	41	469

The responses to the topic of marketing were also classified on the basis of the age of the readers and are shown in Table 61. To determine whether or not the readers exhibited significant age differences concerning their reading preferences, the responses of MORE were

compared with all other responses and analysis of variance was computed. The readers who wanted more space devoted to information on marketing were found to be significantly younger readers. The difference in age was approximately three and one-half years.

Table 61

Amount of Space Requested on Marketing by Age of Readers

Age Level	Level of Response				
	More	Same Amount	Less	None	Total
Under 25 Years	16	5	1	0	22
25 - 34 Years	59	24	5	4	92
35 - 44 Years	66	46	4	10	126
45 - 54 Years	69	26	1	10	106
55 - 64 Years	40	26	0	12	78
Over 64 Years	15	23	0	5	43
Total	265	150	11	41	467

The age of the readers who responded to this topic was controlled by taking a large age category and comparing the responses concerning marketing on the basis of the educational level of the readers. When analysis of variance was computed, a significant difference was found which made more pronounced, the educational differences shown when age was not held constant.

When a similar analysis was made by holding constant the educational level of the readers, no significant age differences were found. Thus, it was evident that the differences noted were associated with the educational level of the readers rather than with their age.

Table 62

Amount of Space Requested on Community Organizations by Educational Level

Educational Level	Level of Response				
	More	Same Amount	Less	None	Total
Less than High School	36	62	9	40	147
Attended High School	13	26	4	9	52
Graduated from High School	39	70	9	29	147
Attended College	15	39	9	12	75
Graduated from College	10	18	7	3	38
No Data	2	3	1	4	10
Total	115	218	39	97	469

To determine if the educational level of the readers was related to the amount of space requested on the topic of community organizations, the responses were classified according to the educational level and are shown in Table 62. When analysis of variance was computed, the

readers who wanted more space devoted to the topic were found to have an educational level similar to that of the other respondents.

The responses to the topic of community organizations were also classified according to the age of the readers and are shown in Table 63. The responses of MORE were compared with all other responses and

Table 63

Amount of Space Requested on Community Organizations by Age of Readers

Age Level	Level of Response				
	More	Same Amount	Less	None	Total
Under 25 Years	7	14	1	0	22
25 - 34 Years	26	47	10	9	92
35 - 44 Years	28	58	11	29	126
45 - 54 Years	29	43	7	27	106
55 - 64 Years	20	36	4	18	78
Over 64 Years	5	19	6	13	43
Total	115	217	39	96	467

analysis of variance was computed. The readers who wanted more information on the topic were found to be significantly older than the other readers. The age difference between the two groups of readers was approximately two years.

The age of the readers who responded to the topic of community organizations was controlled and the responses were compared on the basis of the educational level of the readers. When analysis of variance was computed, no significant educational differences were found. When the educational level of the readers was held constant and the responses to the topic were compared on the basis of the age of the readers, those who wanted more information on community organizations were found to be significantly younger readers. This age difference represented approximately two and one-half years. It was evident that the differences noted were associated with the age of the readers, the younger readers wanting more information on community organizations.

To determine relationships between the reading preferences concerning the topic of landlord-tenant problems and the educational level of the readers, the responses to the topic were classified on the basis of educational level and analysis of variance was computed. No significant differences in educational level were found. Furthermore, when the age of the readers was held constant and a similar analysis was made, no significant educational differences were found.

The responses to the topic of landlord-tenant problems were also compared on the basis of the age of the readers and analysis of variance was computed. No significant differences in age were found. However,

when the educational level of the readers was held constant and analysis of variance computed, a highly significant difference in age was found. The readers who wanted more information on the topic were approximately nine and one-half years younger than the other readers. Thus it was evident that the differences noted were associated with the age of the readers rather than their educational level.

The responses to the topic of reorganizing school districts were compared on the basis of the educational level of the readers. The test of significance demonstrated that there were no educational differences between the readers who wanted more space devoted to the topic and the readers who responded otherwise. Furthermore, when the age of the readers was held constant and a similar analysis of the responses to the topic was made, no significant differences in educational level were found.

The reading preferences concerning school districts were also compared on the basis of the age of the readers. When the responses of MORE were compared with the combined responses of SAME AMOUNT, LESS and NONE as in previous analyses, and analysis of variance computed, no significant relationships were found. However, when the educational level of the readers was held constant and a test of significance applied, the readers who wanted more information were found to be significantly older. The difference in age between the two

groups of readers was approximately five and one-half years. Thus, it was apparent that the differences noted were related to the age of the readers rather than with their educational level.

When analysis of variance was computed as a test of significance for the data concerning the topic of school taxes, no significant educational differences were found. The educational level of the readers who indicated a desire for more information concerning the topic was similar to that of the other respondents. When the age of the readers was held constant and analysis of variance was computed, significant educational differences did not appear.

On the other hand, when the reading preferences concerning school taxes were compared on the basis of the age of the readers, highly significant age differences were found. The readers who wanted more information on the topic were approximately six years older than the other readers. Furthermore, when the educational level of the readers was controlled, the significant difference in age became more pronounced. The readers requesting more information on school taxes were found to be eight years older than the respondents who asked for lesser amounts of information concerning the topic.

The educational level of the readers was also found to be significantly related to the following topics when the age of the readers

was held constant: land prices, well-rounded education and teaching agriculture.

The readers who wanted more space devoted to land prices had a significantly lower educational level than other readers. Readers interested in more information concerning a well-rounded education had a significantly higher educational level than other respondents. Those requesting that more space be devoted to material on teaching agriculture also had a significantly higher educational level than the respondents who requested lesser amounts.

The age of the readers was found to be significantly related to the following topics when the educational level was held constant: state welfare programs, farm prices, taxation and farm legislation. The readers who wanted more information on these topics were significantly older readers than those whose request was for lesser amounts of space.

The editors of Iowa Farm Science were concerned about the role education played in determining the reader's preference for method of presentation of farm information. Did the reader want his information in the form of text, tables, graphs, or perhaps some combination of these methods?

Readers were asked to respond to the statement, "I find it easier to get the information from tables than from text." The responses to this statement were classified on the basis of the educational level of the readers and are presented in Table 64. To determine whether

Table 64

Educational Level and Preference for Tables Rather than Text

Educational Level	Item Checked Yes	No	Total
Less than High School	34	78	112
Attended High School	10	36	46
Graduated from High School	53	89	142
Attended College	26	44	70
Graduated from College	21	32	53
No Data	1	14	15
Total	145	293	438

or not the educational level of the readers who preferred tables rather than text differed from that of the readers who did not check the statement, the responses of the two groups were compared. When analysis of variance was computed, the readers who preferred a tabular presentation were found to have a significantly higher educational level than the other readers.

When the responses to the same statement were classified on the basis of the age of the readers and analysis of variance computed, the readers who checked the statement, thus indicating that they preferred tables rather than text, were found to be significantly younger

Table 65

Age of Reader and Preference for Tables Rather than Text

Age Level	Item Checked Yes	No	Total
Under 25 Years	7	4	11
25 - 34 Years	26	49	75
35 - 44 Years	46	76	122
45 - 54 Years	31	88	119
55 - 64 Years	28	47	75
Over 64 Years	6	27	33
No Data	1	2	3
Total	145	293	438

readers. This age difference was approximately two and one-half years. The distribution of the responses is presented in Table 65.

The age of the readers was controlled by taking a large age category and comparing the reader responses concerning the foregoing

statement, on the basis of the educational level of the readers. When analysis of variance was computed, the significant difference in educational level of the readers became more pronounced.

To determine if this significant difference in the reading preferences of the readers was related to their educational level, the responses to the statement were compared on the basis of age while holding constant the educational level. When analysis of variance was computed, the significant age difference originally produced when education was not held constant, tended to disappear. It was evident that the significant differences concerning the reading preferences were associated with the educational level of the readers rather than their age.

The responses to the statement, "I seldom or never read tables whether they are large or small", were classified according to the educational level of the readers and are shown in Table 66. The responses of those who checked the item were compared with those who did not and analysis of variance was computed. The readers who indicated that they seldom or never read tables had an educational level significantly lower than the other readers.

The responses to the foregoing statement were also classified on the basis of the age of the readers and the resulting distribution

Table 66

Educational Level and Frequency of Reading Tables

Educational Level	Item Checked Yes	No	Total
Less than High School	4	108	112
Attended High School	1	45	46
Graduated from High School	4	138	142
Attended College	1	69	70
Graduated from College	0	53	53
No Data	0	15	15
Total	10	428	438

is presented in Table 67. When analysis of variance was computed, the readers who said they seldom or never read tables were found to be significantly younger readers. This age difference between the two groups of readers was approximately five years.

Table 67

Age of Reader and Frequency of Reading Tables

Age Level	Item Checked Yes	No	Total
Under 25 Years	1	10	11
25 - 34 Years	2	73	75
35 - 44 Years	3	119	122
45 - 54 Years	2	117	119
55 - 64 Years	1	74	75
Over 64 Years	1	32	33
No Data	0	3	3
Total	10	428	438

The age of the readers who responded to the statement was controlled and the responses were compared on the basis of their educational level. When analysis of variance was computed, the significant difference in education originally produced became more pronounced, indicating that the difference noted was related to the education of the readers.

To determine the effect of education and age on the reader's preference concerning graphical presentation of information, the statement, "I seldom read graphs if the information is in the story", was selected for analysis. The responses to the statement were classified on the basis of the education of the readers, and are

Table 68

Educational Level and Preference for Text Rather than Graphs

Educational Level	Item Checked Yes	No	Total
Less than High School	16	96	112
Attended High School	6	40	46
Graduated from High School	22	120	142
Attended College	12	58	70
Graduated from College	6	47	53
No Data	4	11	15
Total	66	372	438

presented in Table 68. When analysis of variance was computed, the readers who indicated they seldom read graphs were found to have an educational level significantly lower than the readers who did not check the statement.

The responses to the statement were classified on the basis of the age of the readers and are shown in Table 69. When analysis of variance was computed, no significant age differences were found, indicating that the age of the reader did not affect his preference for graphical presentation of information.

Table 69

Age of Reader and Preference for Text Rather than Graphs

Age Level	Item Checked		Total
	Yes	No	
Under 25 Years	1	10	11
25 - 34 Years	13	62	75
35 - 44 Years	15	107	122
45 - 54 Years	18	101	119
55 - 64 Years	14	61	75
Over 64 Years	4	29	33
No Data	1	2	3
Total	66	372	438

When the age level of the readers was controlled and analysis of variance computed, the educational differences originally demonstrated on the foregoing statement, disappeared. In a similar analysis, when controlling on the educational level, no significant age differences

were found. It was evident that there was no relationship between the age or educational level of the readers and their preferences for presentation of information in the text rather than in graphs.

The educational level of the readers who said they found it easier to get information from graphs than from tables, was compared with that

Table 70

Educational Level and Preference for Graphs Rather than Tables

Educational Level	Item Checked Yes	No	Total
Less than High School	20	92	112
Attended High School	9	37	46
Graduated from High School	23	119	142
Attended College	15	55	70
Graduated from College	21	32	53
No Data	2	13	15
Total	90	348	438

of the readers who did not check the statement and analysis of variance was computed. The distribution of the responses, when based on the educational level of the readers, is shown in Table 70. The readers who found it easier to get information from graphs rather than tables had a significantly higher educational level.

When the readers were compared on the basis of their age and response to the foregoing statement, those who preferred graphs rather than tables were found to be significantly younger readers. The difference in age represented approximately one and one-half years. The distribution of the responses is shown in Table 71.

Table 71

Age of Reader and Preference for Graphs Rather than Tables

Age Level	Item Checked: Yes	No	Total
Under 25 Years	2	9	11
25 - 34 Years	13	62	75
35 - 44 Years	25	97	122
45 - 54 Years	25	94	119
55 - 64 Years	18	57	75
Over 64 Years	6	27	33
No Data	1	2	3
Total	90	348	438

When the age of the readers was controlled and a similar comparison made of educational level of the readers, the significant educational differences became more pronounced. On the other hand, when the age of the respondents was compared by holding constant their

educational level, the original significant age differences disappeared. It was evident, therefore, that the differences noted in the reading preferences concerning the presentation of information by graphs rather than tables, were associated with the educational level of the readers rather than with their age.

The readers who indicated that they found some of the graphs in Iowa Farm Science hard to understand were found to have a significantly lower educational level than the readers who did not check the statement. They were also found to be significantly younger readers.

When the age of the readers was controlled, the significant difference in educational level disappeared. However, when the age of the readers was compared while holding constant their educational level, the age difference remained highly significant. Thus, it was evident that the differences noted were associated with the age of the readers rather than their educational level.

In summary it can be stated that, the preferences of readers in the present sample were found to be related to education and age. Readers who requested that more space be devoted to material concerning land prices had an educational level significantly lower than the readers who requested the same amount, less or no space concerning

the topic. Readers who wanted more space devoted to information on such topics as marketing, teaching agriculture and a well-rounded education, possessed a significantly higher educational level than readers who requested lesser amounts of information concerning the topics.

The age of the readers was found to be significantly related to their reading preferences concerning the following topics: community organizations, landlord-tenant problems, reorganizing school districts and school taxes. Readers who wanted more space devoted to community organizations were between two and three years younger than the other respondents. On the other hand, readers who were most interested in material on reorganizing school districts and school taxes were approximately six years older than readers who were less interested. When the educational level of the readers who responded to the topic of school taxes was controlled, the age difference became more pronounced.

When the educational level of the readers who responded to the topics of state welfare, farm prices, taxation and farm legislation, was controlled, the readers who were most interested in these topics were found to be significantly older readers.

Neither age nor educational level were found to be related to the reading preferences concerning the topic of farm business.

When the reading preferences concerning the method of presenting farm information were analyzed, significant relationships were found. Readers who preferred tables rather than text possessed a significantly higher educational level than the other respondents. On the other hand, the readers who indicated they seldom or never read tables had a lower educational level.

Readers who indicated they seldom read graphs if the information was in the story, were no different than the other respondents as far as age and education were concerned. Significant differences which were apparently related to either age or education, disappeared whenever the age or educational level of the readers was controlled.

Readers in the present sample who indicated a preference for graphs rather than tables, had a significantly higher educational level than the other respondents. Those who indicated that they found some of the graphs in Iowa Farm Science hard to understand, were significantly younger readers than those with whom they were compared. The difference in age was approximately three years.

Based on the evidence found in the foregoing analyses, it would appear that any attempt to determine relationships between the reading

preferences of adult readers and their age or educational level, should not disregard the age-education relationship here demonstrated. Some attempt should be made to control by taking the larger age and education groups and running tests of significance in the subgroups.

XI. SUMMARY

The effective dissemination of information to farmers is a problem of major concern and is subject to continuous evaluation. To a large extent such reevaluation has been based upon subjective considerations of the publishers. The present study was designed to furnish some evidence to those charged with the publication of one such magazine - the Iowa Farm Science - concerning the reader preferences with respect to content as well as method of presentation and their relationship to such factors as age, education, farming status and source of farm income.

Questionnaires were mailed to 3,582 readers of the Iowa Farm Science who had designated their occupation as farming and 3,101 questionnaires were returned in usable form.

The geographical distribution of these Iowa farm readers, when classified by counties, indicated that the number of readers per thousand farms varied from a low of 5.1 to a high of 36.6.

The age and source of farm income of the readers were found to be similar to that of the rural male population of Iowa. However, the educational level appeared to be higher than that of the average Iowa farmer, the mean grade level being approximately eleven years.

The farming status of the readers was similar to that of the Iowa farm population, although there was some slight tendency for fewer tenants to be found in the present study than would be expected from the number of tenants in the Iowa farm population.

Of the 86.6 per cent who responded, a separate analysis was made of those who responded early and those who responded as a result of a follow-up. Some differences were noted, particularly with respect to age, education and source of farm income. Although these differences were significant, they were not unusually large, suggesting that the interpretations made on the basis of the 86.6 per cent who returned questionnaires would be similar if the group had consisted of the complete list of the farm readers.

The responses of MORE, LESS and SAME AMOUNT of Iowa Farm Science readers were recorded on ninety-one topics based on twenty-eight subjects dealing with material that had previously been published in the magazine.

The topics on hogs received the highest number of requests for more information of any of the livestock topics. During the four years 1946-1950, nearly forty-two per cent of the total space devoted to livestock in Iowa Farm Science was given to articles on hogs.

An analysis of the reading preferences concerning hog topics indicated that the readers whose farming program was rather general in nature wanted significantly more information about the feeding of the sow and litter than other groups. Readers in the Southern Pasture area of the state indicated a desire for significantly more information on hog equipment.

Landlords in the present sample were only mildly interested in such hog topics as market hogs, feeding the sow and litter, hog breeding and equipment. The landlords wanted significantly less space devoted to these topics. Their response would indicate, perhaps, that many of them were farming on a cash grain basis and were, therefore, not as interested in such livestock information as were the other readers. On the other hand, tenants wanted significantly more space devoted to a discussion of these hog topics. The tenants undoubtedly look upon hogs as a mainstay in their farming program and would therefore be inclined to show more interest in the enterprise. Because tenants represent a major farm group both in the present study and in the general Iowa farm population, the interest shown in hog information would seem to warrant at least the same amount or more space for the topic in Iowa Farm Science.

In the area of the beef cattle enterprise, the readers whose major source of farm income was predominantly beef-hog wanted

significantly more information on beef cattle topics. As would be expected, readers whose major source of income was primarily dairy-hog in nature, indicated a desire for significantly more information about dairy cattle. It was noted that readers in various farming areas of the state did not differ significantly in their requests for dairying information. The fact that more of the readers in the North-eastern Dairy area did not want more dairy information than readers in other areas, would indicate perhaps that the present sample may not have been a true cross-section of the state as far as farm income was concerned.

Of the topics dealing with farm crops, the respondents' requests indicated that more information than had previously been published, should be devoted to pastures and legumes. Readers in the Southern Pasture area wanted significantly more space devoted to a discussion of pastures.

A majority of the readers indicated a desire for more or the same amount of space devoted to crop rotations and soil erosion. However, readers did not differ from one farming area to another or on the basis of their farming status when preferences to these topics were analyzed. Cash grain farmers did indicate a significantly higher interest in crop rotations than did other farm income groups. They also asked for more information dealing with soil drainage. Significantly fewer

readers in the Western Livestock area were interested in the drainage problem, indicating perhaps, that the area has relatively less tillable land requiring drainage systems to bring it into cultivation.

The popularity of the foregoing topics and such topics as small grains, fertilizers, grasses and legumes, corn and weather, as shown by the uniformity of requests for more or the same amount of information, would indicate the merit of continuing to publish numerous articles along these lines.

When the preferences concerning poultry were analyzed, poultry diseases stood out as the most preferred topic. The problem of poultry diseases appeared to be of universal interest to readers regardless of their farming status, source of farm income or farming area. Furthermore, the interest in such topics as egg production, housing and growing chicks, was as high in one farming status group or section of the state as it was in another. For some reason readers in Iowa's Southern Pasture area were significantly more interested in getting more information about market poultry. It would appear that such an interest represents the preferences of a specialized group and not the general flock owner in Iowa.

The universal interest expressed in a majority of the poultry topics, coupled with the fact that more than three-fourths of the

readers in the present sample had poultry on their farms, would indicate that more space should be devoted to poultry in future issues of the magazine.

Iowa is an agricultural state whose farming program is rapidly becoming a highly mechanized one. The editors of Iowa Farm Science, in keeping abreast of the changes and trends in farm machinery and equipment, were interested in what the readers wanted concerning such topics. Although the readers were found to display a great deal of interest in old and new machinery, farm buildings, electrical costs and equipment, few significant differences were found when the preferences of the readers were compared on the basis of their farming area, farming status or source of income.

Many significant relationships were demonstrated when the characteristics of the readers were compared on the basis of reading preferences regarding farm management topics and topics dealing with the sociological development of the farm reader and his family. Tenants indicated a desire for significantly more information about land prices. They were also more interested in reading material concerning landlord-tenant problems. Such a response indicates the tenant's over-all interest in editorial material which aids him in getting more firmly established in farming. Landlords and full owners wanted significantly less space devoted to landlord-tenant problems. The fact that younger

readers were also more interested in the tenancy problem would indidate perhaps, a relationship between farm tenancy and age, the tenants being younger farmers than those in other farming status groups.

The problem of school district reorganization is an important one in many of Iowa's rural communities. However, the present sample of rural folk did not exhibit great differences regarding the amount of space they thought Iowa Farm Science should devote to the topic. The only significant relationship between characteristics of the readers and their preferences concerning the topic was one of age. Those who were most interested in school districts were significantly older readers.

Readers indicating a high degree of interest in school taxes were also significantly older readers. Those who wanted more information about state welfare programs, farm legislation and taxation, were also significantly older readers than those who wanted lesser amounts. Editorial material about community organizations seemed to attract the younger readers.

Readers who requested more space on the topics of teaching agriculture and a well-rounded education were found to have an educational level significantly higher than the respondents who wanted lesser amounts of space devoted to the topics.

The editors of Iowa Farm Science were also concerned about the role that education and age played in determining the reader's preference for method of presentation of farm information. In other words, did the reader want his information in the form of text, tables or graphs? When reading preferences were analyzed, those who preferred tables rather than text were found to possess a significantly higher educational level than the other readers. On the other hand, the readers who seldom or never read tables had a lower educational level.

Readers who indicated they seldom read graphs if the information was in the story, were no different than the other respondents so far as education and age were concerned. Those who would rather get their farm information in a graph rather than a table had a significantly higher educational level.

In many of the analyses, significant differences which were apparently related to either age or education, disappeared whenever the age or educational level of the reader was controlled. Based on such evidence, any further attempts by the magazine to determine relationships between reader characteristics, should not disregard the age-education relationship here demonstrated.

It would appear from the evidence found in the present study, that the editors of Iowa Farm Science are doing a commendable job of satisfying the preferences of the farm reader. Although differences

among the present group of readers have been demonstrated, such differences do not assume sufficient magnitude, to warrant any other than minor changes in the present editorial policy of the magazine.

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XIII. APPENDIX

Publications Office
I O W A S T A T E C O L L E G E
Ames, Iowa

March 17, 1951

Dear Sir:

We are still trying to make IOWA FARM SCIENCE a better and more useful publication.

Enclosed is a card with a few questions we'd like you to answer to help us make IOWA FARM SCIENCE more effective.

This card does not require postage. Simply drop it in the mail after you have checked your answers.

It's not necessary to sign the card unless you wish to do so. However, we'd appreciate a prompt return. Thank you.

Sincerely yours,

/S/ Fred E. Ferguson

Fred E. Ferguson
Editor
IOWA FARM SCIENCE

Publications Office
I O W A S T A T E C O L L E G E
Ames, Iowa

Dear Sir:

A few weeks ago you should have received a questionnaire card from us. Once again we're trying to get some information to help us make IOWA FARM SCIENCE a better and more useful publication for you.

If you happened to put the card to "one side" for a moment intending to fill it out later, won't you please fill it out and send it back now? For your convenience, we're enclosing another card just in case you've misplaced the first one.

This card does not require postage. After you've checked your answers, simply drop it in the mail.

It's not necessary to sign the card unless you wish to do so. However, we would appreciate your answers. Thank you.

Yours sincerely,

/S/ John F. Heer

John F. Heer
Managing Editor
IOWA FARM SCIENCE

No Postage Stamp Necessary If Mailed in the United States

Postage Will Be Paid by Addressee

BUSINESS REPLY CARD

First Class Permit No. 176, Sec. 34.9 P. L. & R., Ames, Iowa

Iowa Farm Science
Agricultural Annex
Iowa State College
Ames, Iowa

Please place one check (✓) after the enterprises you have on your farm, and two checks (✓✓) after those that are *major* sources of your farm income.

Sheep	_____	Poultry	_____	Corn	_____
Beef cattle	_____	Fruits or vegetables	_____	Grasses or Legumes	_____
Hogs	_____	Small grains	_____	Soybeans	_____
Dairying	_____				

Please check (✓) your present farming status:

1. Landlord	_____	3. Renter	_____	5. Hired hand	_____
2. Owner-operator	_____	4. Manager	_____	6. Other	_____

Draw a circle around the highest school grade you have completed.

Elementary								High School				College			
1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4

Were you ever a student at Iowa State College? Yes_____ No_____

Check (✓) your present age:

1. Under 25	_____	3. 35 to 44	_____	5. 55 to 64	_____
2. 25 to 34	_____	4. 45 to 54	_____	6. Over 64	_____

Name _____

4800 Address _____

Occupation _____

Sign Your Name. This Card Takes 3 Cents Postage.

Please keep my name on the mailing list to receive IOWA FARM SCIENCE. (Names of those who do not return this card will be dropped from the mailing list.)

Name .....

Address .....
(Street or Rural Route)

City .....

Will You Give Us a Little Help?

We'd like you to help us make IOWA FARM SCIENCE a better magazine. Please check through the subjects listed below and let us know whether you would like us to give more, less or about the same amount of space to these subjects as in the past. We have divided up the subjects so other folks are answering on other topics. Thanks for your help.

BEEF CATTLE

On feeding I want: more.... less ... same amount....
On breeding I want: more ... less.... same amount ..
On raising calves for feeders I want: more .. less .. same amount....
On housing and equipment I want: more .. less ... same amount ..

HOGS

On breeding I want: more.... less .. same amount....
On feeding, care of sow and litter I want: more .. less .. same amount ...
On feeding for market I want: more.... less .. same amount ...
On hog houses and equipment I want: more.... less ... same amount....

DAIRYING

On feeding of calves I want: more ... less.... same amount ..
On feeding dairy cows I want: more.... less ... same amount ...
On dairy barns and shelters I want: more.... less ... same amount ...

SHEEP

On lamb feeding I want: more.... less.... same amount....
On care and management of breeding flock I want: more ... less.... same amount....

You may use the rest of this space for comments of any kind on IOWA FARM SCIENCE or to suggest topics you are especially interested in.

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FARM CROPS

On new varieties developed I want: more ... less ... same amount ....
On small grains I want: more .... less ... same amount ...
On corn I want: more ... less ... same amount ....
On grasses and legumes I want: more ... less .... same amount ...
On how to improve pastures I want: more ... less ... same amount ...
On what I must do to produce certified seed I want: more .... less ... same amount ....
On where to obtain certified seed I want: more ... less .... same amount ...

SOILS—FERTILIZERS

On fertilizers for small grains I want: more ... less .... same amount ...
On fertilizers for corn I want: more ... less .... same amount ...
On how to apply fertilizers I want: more .... less ... same amount
On crops rotations I want: more .... less .... same amount ....
On how to stop soil erosion I want: more ... less ... same amount ...
On soil drainage I want: more ... less ... same amount ....

WEATHER

On studies of weather effect on crops I want: more ... less ... same amount ...

You may use the rest of this space for comments of any kind on IOWA FARM SCIENCE or to suggest topics you are especially interested in.

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POULTRY

On feeding for egg production I want: more ... less ... same amount ...
On feeding and producing chickens for market I want: more ... less ... same amount ...
On rearing young chicks I want: more ... less ... same amount ...
On diseases and what to do about them I want: more ... less ... same amount ...
On houses and equipment I want: more ... less ... same amount ...

FARM MACHINERY

On new machines coming out I want: more ... less ... same amount ...
On repair of old machines I want: more ... less ... same amount ...

FARM BUILDINGS

On repair, painting and rearranging I want: more ... less ... same amount ...
On plans for new buildings on the farm I want information on: (list buildings) .....

.....

ELECTRICITY

On electrical wiring I want: more ... less ... same amount ...
On electrical equipment for the farm I want: more ... less ... same amount ...
On how to use electricity and its costs I want: more ... less ... same amount ...

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FARM BUSINESS (Economics)

On outlook for farm prices I want: more ... less ... same amount ...
On managing the farm business I want: more ... less ... same amount ...
On farm legislation and policy I want: more ... less ... same amount ...
On land price changes I want: more ... less ... same amount ...
On landlord-tenant problems I want: more ... less ... same amount ...
On taxation and other public problems I want: more ... less ... same amount ...
On marketing farm products I want: more ... less ... same amount ...
On international trade questions I want: more ... less ... same amount ...

SCHOOLS

On reorganizing school districts I want: more ... less ... same amount ...
On teaching of agriculture in schools I want: more ... less ... same amount ...
On tax problems as related to schools I want: more ... less ... same amount ...
On what is needed for a well rounded education I want: more ... less ... same amount ...

FAMILY AND COMMUNITY LIVING (Rural Sociology)

On community organizations and living I want: more ... less ... same amount ...
On studies of population growth I want: more ... less ... same amount ...
On state and national welfare programs I want: more ... less ... same amount ...

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HOME—HOUSEHOLD

On probable prices of things to buy I want: more ... less ... same amount ...
On cooking problems, recipes, meal planning I want: more ... less ... same amount ...
On clothing and new textiles I want: more ... less ... same amount ...
On developments and tests of household equipment I want: more ... less ... same amt. ...
On furniture and household furnishings I want: more ... less ... same amount ...
On managing to save time and labor I want: more ... less ... same amount ...
On family recreation—fun and play—I want: more ... less ... same amount ...
On child care and training of children I want: more ... less ... same amount ...

FREEZING FRUITS, VEGETABLES, MEATS

On packaging and preparing for freezing I want: more ... less ... same amount ...
On use of frozen foods I want: more ... less ... same amount ...
On cost and use of home freezers I want: more ... less ... same amount ...

ROADS

On questions concerning farm roads I want: more ... less ... same amount ...

You may use the rest of this space for comments of any kind on IOWA FARM SCIENCE or to suggest topics you are especially interested in.

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FRUITS, VEGETABLES, FLOWERS

On growing fruits I want: more ... less ... same amount ...
On growing vegetables I want: more ... less ... same amount ...
On growing flowers I want: more ... less ... same amount ...

WEEDS, INSECTS

On control of weeds I want: more ... less ... same amount ...
On cleaning and treating seed I want: more ... less ... same amount ...
On control of corn borers I want: more ... less ... same amount ...
On control of other crop insects I want: more ... less ... same amount ...
On control of rats and other rodents I want: more ... less ... same amount ...

WILDLIFE (Game, fish, etc.)

On trapping I want: more ... less ... same amount ...
On fish I want: more ... less ... same amount ...
On other wild animals I want: more ... less ... same amount ...

You may use the rest of this space for comments of any kind on IOWA FARM SCIENCE or to suggest topics you are especially interested in.

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City .....

Will You Give Us a Little Help on Tables and Graphs?

We are interested in knowing what you folks who receive IOWA FARM SCIENCE think about tables and graphs. If you will check the answers below, your answers with those from many others should give us some help.

TABLES

When a story gives figures and says (see table 1):

I always turn to the table....
I sometimes look at the table ...
I never read the table unless it is necessary to get the information I want....
I prefer to have the figures given to me in the story without tables....
I find it easier to get the information from tables than from text....
If tables are short and not complicated I read them....
I read tables regardless of whether they are small or large....
I seldom or never read tables whether they are small or large ...

GRAPHS

I always look at and try to get information from graphs....
I seldom read graphs if the information is in the story ...
I never read graphs in the stories....
I find it easier to get information from graphs than tables ..
I find some of your graphs hard to understand ..
I have never had difficulty reading and understanding your graphs....

COMMENTS

Add anything you wish here about the use of graphs and tables. We would like to have your ideas about them. .....

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